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TESLA-SCHERFF PAPERS

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"Nay ladies, fear not;
By all the laws of war you're privileged."

Henry VIII, Act 1, Scene 15.

The Players,

16 Gramercy Park.

The Players request the honor of your company on
the afternoon of Monday, April the twenty third,
from two until six o'clock.

M

with compliments of Mr. Nikola Tesla

1900.

*This card will admit one lady only
and must be signed by a member of the Club.*

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Nikola Tesla,
New York, 1900
Invitation card of the Players Club,
signed by Tesla

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Nikola Tesla, Esq.,

New York City.

Dear Mr. Tesla:-

I beg to acknowledge receipt of your favor of 7. stating copy of 117 tax report of the Nikola Tesla Company for the year 1912, which I at once forwarded with the Collector of Internal Revenue.

As regards your note for \$500.00, which I have been endeavoring to have the same extended by the present law, I have been in opposition. If you could send me a check of two hundred dollars on account, I believe I could persuade the parties to extend the note. Kindly let me know your decision in the matter of the note, so that the note may not go to protest.

Respectfully yours,

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(Tesla, Nikola)
n.p., 10 May 1913
To Nikola Tesla
t.l., 1 p. (Carbon copy of a l.
Tesla's lawyer(?))

21380E

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PROSPECTUS FOR MR. TESLA'S NITRATES COMPANY.

~~Mr. Nikola Tesla, whose~~ *discoveries*
~~more recent practical applications of electricity, and which by~~
~~their world-wide recognition have given this inventor a pre-eminent~~
~~position in the field of electricity, has, by a series of discover-~~
~~ies extending over many years, and all protected by broad patents~~

has evolved
a new and
efficient
process for

the fixation of atmospheric nitrogen, *that is, its chemical combination with*
~~the oxygen of the atmosphere into~~
~~a fixed form, which, by its~~
tremendous value and wide-reaching influence, bids fair to outrank
many times his wonderful invention of the alternating current motor.

~~First, that his high-frequency electric discharges in~~ (over)

~~the atmosphere give in a much more effective degree a peculiar~~
~~electric chemical stress, which brings about this most difficult~~
~~of combinations; a stress which all workers in this field have~~
~~recognized for years as being one which not only must be of~~
~~tremendous power, but of almost infinite suddenness. The time~~
~~element which has so materially interfered with the success of~~
~~other workers in this field, has, by Mr. Tesla's invention, been~~
~~almost entirely removed as an objection.~~

~~Second, Mr. Tesla's peculiar means of obtaining phenom-~~
~~enally high voltages (running into the millions of volts) from~~
~~apparatus of most moderate dimensions enables him to obtain the~~

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Tesla Nitrates Company.
n.p., n.d.
t.ms., 6 p. (with copious holograph notes
by Tesla)

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and forgotten

early
 + He ~~recognized~~ ^{recognized} the immense possibilities of such a departure, and ~~in an article published a few years ago~~ he made the startling prediction that ~~the electric fixation of atmospheric nitrogen would before long develop into an industry next to that of iron in importance. At that time nothing had been done towards commercial exploitation. Now his~~ his foresight is shown by the fact that in various countries ~~astronomical~~ ^{and large} investments have been made. In Norway, ~~which alone has completed~~ ^{which alone has completed} ~~about one quarter million~~ ^{about one quarter million} ~~lamps and produced 120,000 tons of nitric acid~~ ^{lamps and produced 120,000 tons of nitric acid} ~~is contemplated, and fifty million dollars have been already expended in the industry.~~ ^{is contemplated, and fifty million dollars have been already expended in the industry.} ~~all of these undertakings are based on the~~ ^{all of these undertakings are based on the} ~~method and apparatus utilizing no more than a few per cent~~ ^{method and apparatus utilizing no more than a few per cent} ~~of the electric energy of the current, and although for a first cost so great, the interest and maintenance charges have rendered the business unprofitable.~~ ^{of the electric energy of the current, and although for a first cost so great, the interest and maintenance charges have rendered the business unprofitable.} ~~The fixation or burning of atmospheric nitrogen is effected economically by lightning discharges which precipitate from four to twenty pounds of nitrogenous compounds per acre per year, an enormous amount when considering their scarcity.~~ ^{The fixation or burning of atmospheric nitrogen is effected economically by lightning discharges which precipitate from four to twenty pounds of nitrogenous compounds per acre per year, an enormous amount when considering their scarcity.} ~~This high efficiency is due to the great power, suddenness, length and volume of the discharges, and instant cooling, resulting therefrom.~~ ^{This high efficiency is due to the great power, suddenness, length and volume of the discharges, and instant cooling, resulting therefrom.} ~~These ideal requirements are fulfilled in the new process, owned by the Tesla Nitrate Company.~~ ^{These ideal requirements are fulfilled in the new process, owned by the Tesla Nitrate Company.} ~~The "Tesla Transformer" enables the production of electrical effects of virtually unlimited power, surpassing even those of lightning, as has been demonstrated in actual experiments by its inventor.~~ ^{The "Tesla Transformer" enables the production of electrical effects of virtually unlimited power, surpassing even those of lightning, as has been demonstrated in actual experiments by its inventor.} ~~The "high frequency" or so-called Tesla currents have the peculiar property of exciting the dissociation of nitrogen, causing the gas to combine with a lower expenditure of energy.~~ ^{The "high frequency" or so-called Tesla currents have the peculiar property of exciting the dissociation of nitrogen, causing the gas to combine with a lower expenditure of energy.}

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attenuated are so necessary for the highest efficiency.

Third, by virtue of the peculiar nature of Mr. Tesla's transformer, he is enabled to produce a certain tonnage of product with such a small amount of apparatus and a consequently reasonable investment as to multiply a thousand-fold, the capacity efficiency of his plant. This item is of vast importance in connection with this subject. Many experimenters have produced nitric acid from the atmosphere and there are now some very large plants engaged in this industry, one particularly in Norway, that involves upwards of \$50,000,000, and which will absorb some 200,000 horse power when it is fully expanded, but without exception all these efforts have resulted in a first cost of apparatus so great that the interest and maintenance alone thereof puts a fixed charge upon each ton of the product that has heretofore rendered the business indifferently attractive to capital. Ignoring, therefore, for the moment, the increased efficiency claimed by Mr. Tesla, or his novel method of burning the atmosphere, and assuming only that he shall burn it as it has been done before by others, that his devices are applied to the old process, the commercial advantages secured will still be such as to make the success of the project absolutely certain. If power can be had at a reasonable price, for the production of a sufficiently reasonable price to make the plant instead of costing 80-100 dollars per ton of annual product, will only cost for an expenditure of eight dollars, or less. The pure acid and its salts, thus prepared are of great purity and sell at 100-200 dollars per ton. Its impurities, sold for \$55. and better. The operation of these plants, like those of hydro-electric installations, require but little labor. There is no essential and care.

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**** & Their insurmountable suddenness, removes one great obstacle which has so materially interfered with the success of the old method and appliances.

& Tesla means for generating enormous electrical pressures with apparatus of surprisingly small dimensions, enables the production of discharges or arcs of the great length and volume so necessary to the highest efficiency.

By this means it is possible to operate units of any capacity, however great, to burn the air at any desired rate and thus increase a thousand fold the effectiveness of the plants. The Tesla apparatus may be likened to a turbine running at a stupendous speed, while that ~~apparatus~~ ~~now employed~~ is comparable to an old fashioned engine turning slowly. For the same performance the latter is ever so much more cumbersome and expensive. ~~This is a great saving in the first cost and in the charges.~~

& This is of vital importance to the enterprise reducing as it does, to a minimum the first cost ^{the burden of} and fixed charges. To illustrate, ~~namely that~~ disregarding xx (the side)

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part ^{of the plant} ~~of the plant~~ subject to rapid ^{deterioration} ~~wear and tear~~; in fact, most of it is ^{good for one hundred years} ~~good for one hundred years~~ consists principally of brick ^{and metal and is good for centuries} ~~buildings, transformers, brick or tile combustion chambers and equipping powers or their equivalent~~. The process is a continuous one and once started requires no manual labor, ^{electricity} ~~and electricity~~ continuing to burn the atmosphere into nitric fumes, which in turn combine with water to make nitric acid, and this goes on until the ~~current~~ ^{current} is switched off, and immediately recommences when ^{the} ~~current~~ ^{is} switched on. There is no loss upon the discontinuing of the process for an hour, a day, a month or a year, ^{other than} ~~except~~ that ^{the} ~~loss~~ due to plant lying idle and carrying ^{the smell} ~~its own~~ of interest. It is obvious, therefore, that it ^{can be built up} ~~only remains to obtain power at a sufficiently reasonable price to make an almost unlimited industry~~ ^{can be built up} with a very reasonable investment of capital yielding annually a return many times the first cost.

The Tesla Nitrates Company owns the exclusive rights under the United States patents granted to ^{and} ~~the~~ Tesla, applicable to the manufacture of nitrates from the atmosphere, ^{which are the following:} ~~which are the following:~~ ^{It will do our any} ~~relative to this subject~~ ^{improvements he may make} ~~relative to this subject~~ ^{and we get the benefit of his assistance and advice} ~~relative to this subject~~ ^{xxxx though advisable} ~~relative to this subject~~ ^{It is proposed to immediately make a demonstration of the} ~~relative to this subject~~ ^{valuable advantages of the novel process with a model plant} ~~relative to this subject~~ ^{on the commercial magnitude in the immediate vicinity of New York} ~~relative to this subject~~ ^{City, where experts and investors may see for themselves the} ~~relative to this subject~~ ^{practical application of these inventions, in a full-sized unit} ~~relative to this subject~~ ^{apparatus. In making this test, Mr. Tesla will have at his} ~~relative to this subject~~ ^{disposal, a plant that has already cost over \$200,000, a large} ~~relative to this subject~~ ^{part of which will be immediately available.} ~~relative to this subject~~ ^{It is estimated that} ~~relative to this subject~~ ^{this test will involve an expenditure of \$25,000} ~~relative to this subject~~ ^{will be ample to meet} ~~relative to this subject~~

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ishing of the additional apparatus, partly for attendance and
 all expenses in the connection. Incidentally the plant will serve
 operation and partly for the very full and exhaustive demonstra-
 the important purpose of exhaustively testing the latest improvements
 tion which it is proposed to be made
 prior to their application on the large scale contemplated.

XXXX # Tesla is now devoting himself to
 the perfection of plans for ~~small~~ ^{large} ~~scale~~ ^{installation}
 being entered in this work by a ~~well known~~
 producer of international repute who has ~~been~~ ^{been} for a long time
~~has~~ a long experience in the fixation of nitrogen
 by the old method and is thoroughly familiar
 with all ~~the~~ facts pertaining to the manufacture
 and sale of the products. In the near
 time X X

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The subject you wish to write about. In order to explain this phenomenon Einstein has invented the quantity "lambda".

My theory of gravitation explains this phenomenon perfectly.

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Spec Ms Coll Tesla

Tesla, Nikola
n.p., 15 Apr 1932
a.m.s.s. (with initials), 2 p. (Statement of
Tesla relating to force and matter, to
Einstein's theories, and Tesla's own
theory of gravitation)

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N.Y. April 18. 1932

We need a great deal about the
~~cosmic rays~~ matter being
changed into force and force
being changed into matter
by the cosmic rays. This is
absurd. It is the same as
saying that the body can be
changed into the mind, and the
mind into the body. We know
that the mind is a functioning
of the body, and in the same
manner force is a function of
matter. Without a body there
can be no mind, without matter
there can be no force.

Einstein has for years developed
formulas explaining the mechanism
of the cosmos. In doing this he
overlooked an important factor,
namely the fact, namely that some
of the heavenly bodies are increasing
in distance from the sun. This
is the same as writing for a
business letter and forgetting

DICKSON D. ALLEY,

FORMERLY OF TOWNHILL & CO.

ART PHOTOGRAPHER,

12 EAST 15TH STREET, NEAR 5TH AVENUE.

35

Paintings, &c., copied by the Isachromatic Process.

New York May 26 1903

Dear Mr. Alley,

Sorry I missed you. I want you to
 take two snaps at my place from the rail-
 road track so that the chimney of the building
 is just in the center of frame. From a
 previous photograph taken by one of my
 assistants it would seem that the best view
 would be obtained by placing the camera
 not quite on the end of the central path
 from ^{railroad} track to building but considerably
 closer to latter. The camera in my opinion
 should also be elevated considerably above
 ground, but this may not be necessary.
 Please when taking this principal view
 see that the doors of the building are
 wide open and the door of the tool room
 is wide closed and that the two tanks in
 front of tool room appear symmetrical with
 respect to door. Also observe that all
 the windows are down and that the workmen

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Tesla, Nikola
 New York, 26 May 1903
 To Dickson D. Alley
 a.l.s., 2 p.

the new set of windows. Have any other
irregularities you may notice removed. Remove
the boiler in 20 days should be taken away
you will get all the help necessary. What
I want is a clear unobstructed window and
boiler in place.

I appear to have the correct picture.
The other two are not. The first is a
copy of the original.

Benjamin Franklin I found a single paper from
on which you may observe the following to
as to secure a good collection as to a
about this G. H. Schuyler. Two papers of
this may be taken.

In addition I would like to take an
 ascent of the tower above. This may
 be done from behind & placing the
 camera just in front of the window
 house. Of this one says will be successful.

You will probably have some plates left
and in this case two or three of them
laboratory may be taken - I mean views
of that part which is nearest to the lower

About this Mr. Schuyler knows also. You can
go to lunch to my place or his and if you should
find it necessary stay over night. Please let me hear

Then view em as good in shape and
as soon as possible, round them
thoroughly over to be
of X's attention for see how they feel

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Tesla, Nikola
New York, 26 May 1903
To Dickson D. Alley
a.l.s., 2 p.

21380E



Apr 17 1936

At the close of 1889, having worked one year in the shops of George Westinghouse, Pittsburgh, I experienced so great a longing for resuming my interrupted investigations that, notwithstanding a very tempting proposition by him, I left for New York to take up my laboratory work. But owing to pressing demands by several foreign scientific societies I made a trip to Europe where I lectured before the Institution of Electrical Engineers and Royal Institution in London and the Societe de Physique in Paris. After this and a brief visit to my home in Yugoslavia I returned to this country in 1892 eager to devote myself to the subject of predilection of my thoughts: the study of the universe.

During the succeeding two years of intense concentration I was fortunate enough to make two far-reaching discoveries. The first was a dynamic theory of gravity, which I have worked out in all details and hope to give to the world very soon. It explains the causes of this force and the motions of heavenly bodies under its influence so satisfactorily that it will put an end to idle speculations and false conceptions, as that of curved space. According to the relativists, space has a tendency to curvature owing to an inherent property or presence of celestial bodies. Granting a semblance of reality to this fantastic idea, it is still self-contradictory. Every action is accompanied by an equivalent reaction and the effects of the latter are directly opposite to those of the former.

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Tesla, Nikola
n.p., after 1936
t.ms., 10 pp.
(Some biographical information, but
mainly on his various discoveries)

Supposing that the bodies act upon the surrounding space causing curvatures of the same, it appears to my simple mind that the curved spaces must react on the bodies and, producing the opposite effects, straighten out the curves. Since action and reaction are co-existent, it follows that the supposed curvature of space is entirely impossible. But even if it existed it would not explain the motions of the bodies as observed. Only the existence of a field of force can account for these and its assumption dispenses with space curvature. All literature on this subject is futile and destined to oblivion. So are also all attempts to explain the workings of the universe without recognizing the existence of the ether and the indispensable function it plays in the phenomena.

My second discovery was a physical truth of the greatest importance. As I have searched the scientific records in more than a half dozen languages for a long time without finding the least anticipation, I consider myself the original discoverer of this truth, which can be expressed by the statement: There is no energy in matter other than that received from the environment. On my 72th birthday I made a brief reference to it, but its meaning and significance have become clearer to me since then. It applies rigorously to molecules and atoms as well as to the largest heavenly bodies, and to all matter in the universe in any phase of its existence from its very formation to its ultimate disintegration.

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Being perfectly satisfied that all energy in matter is drawn from the environment, it was quite natural that when radioactivity was discovered, in 1896 I immediately started a search for the external agent which caused it. The existence of radioactivity was positive proof of the existence of external rays. I had previously investigated various terrestrial disturbances affecting wireless circuits but none of them or any others emanating from the earth could produce a steady sustained action and I was driven to the conclusion that the activating rays were of cosmic origin. This fact I announced in my papers on Roentgen rays and Radiations contributed to the Electrical Review of New York, in 1897. However, as radioactivity was observed equally well in other widely separated parts of the world, it was obvious that the rays must be impinging on the earth from all directions. Now, of all bodies in the Cosmos, our sun was most likely to furnish a clue as to their origin and character. Before the electron theory was advanced, I had established that radioactive rays consisted of particles of primary matter not further decomposable, and the first question to answer was whether the sun is charged to a sufficiently high potential to project such particles and produce the effects noted. This called for a prolonged investigation which culminated in my finding that the sun's potential was 216 billions of volts and that all such large and hot heavenly bodies emit cosmic rays. Through

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Further solar research and observation of Novae this has been proved conclusively, and to deny it would be like denying the light and heat of the sun. Nevertheless, there are still some doubters who prefer to shroud the cosmic rays in deep mystery. One of them declared recently that they must come from very remote regions in which matter is converted into energy. I am sure that this is not true for there is no place where such a process occurs in this or any other universe beyond our ken.

A few words will be sufficient in support of this contention. The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of velocity. Let the mass be reduced, the energy is diminished in the same proportion. If it be reduced to zero the energy is likewise zero for any finite velocity. In other words, it is absolutely impossible to convert mass into energy. It would be different if there were forces in nature capable of imparting to a mass infinite velocity. Then the product of zero mass with the square of infinite velocity would represent infinite energy. But we know that there are no such forces and the idea that mass is convertible into energy is rank nonsense.

While the origin and character of the rays observed near the earth's surface are sufficiently well ascertained, the so-called cosmic rays observed at great altitudes presented

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a riddle for more than 26 years, chiefly because it was found that they increased with altitude at a rapid rate. By investigations have brought out the astonishing fact that the effects at high altitudes are of an entirely different nature, having no relation whatever to cosmic rays. These are particles of matter projected from celestial bodies at very high temperature and charged to enormous electric potentials. The effects at great elevations, on the other hand, are due to waves of extremely small lengths produced by the sun in a certain region of the atmosphere. This is the discovery which I wish to make known. The process involved in the generation of the waves is the following: The sun projects charged particles constituting an electric current which passes through a conducting stratum of the atmosphere approximately 10 kilometers thick enveloping the earth. That is a transmission of energy exactly as I illustrated in my experimental lectures in which one end of a wire is connected to an electric generator of high potential, its other end being free. In this case the generator is represented by the sun and the wire by the conducting air. The passage of the solar current involves the transference of electric charges from particle to particle with the speed of light, this resulting in the production of extremely short and

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penetrating waves. As the air stratum mentioned is the source of the waves it follows that the so-called cosmic rays observed at great altitudes must increase as this stratum is approached. My researches and calculations have brought to light the following facts in this connection: (1) the intensity of the so-called cosmic rays must be greatest in the zenithal portion of the atmosphere; (2) the intensity should increase more and more rapidly up to an elevation of about 20 kilometers where the conducting air stratum begins; (3) from there on the intensity should fall, first slowly and then more rapidly, to an insignificant value at an altitude of about 30 kilometers; (4) the display of high potential must occur on the free end of the terrestrial wire, that is to say, on the side turned away from the sun. The current from the latter is supplied at a pressure of about 216 billion volts and there is a difference of 2 billion volts between the illuminated and the dark side of the globe. The energy of this current is so great that it readily accounts for the aurora and other phenomena observed in the atmosphere and at the earth's surface.

For the time being I must content myself with the announcement of the salient facts, but in due course I expect to be able to give more or less accurate technical

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data relating to all particulars of this discovery.

To go to another subject, I have devoted much of my time during the year past to the perfecting of a new small and compact apparatus by which energy in considerable amounts can now be flashed through interstellar space to any distance without the slightest dispersion. I had in mind to confer with my friend George E. Hale, the great astronomer and solar expert, regarding the possible use of this invention in connection with his own researches. In the meantime, however, I am expecting to put before the Institute of France an accurate description of the devices with data and calculations and claim the Pierre Curie Prize of 100,000 francs for means of communication with other worlds, feeling perfectly sure that it will be awarded to me. The money, of course, is a trifling consideration, but for the great historical honor of being the first to achieve this miracle I would be almost willing to give my life.

My most important invention from a practical point of view is a new form of tube with apparatus for its operation. In 1886 I brought out a high potential targetless tube which I operated successfully with potentials up to 4 million volts from '96 to '98. This device was adopted by many imitators

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and with slight modifications it is employed even now in all research laboratories and scientific institutions here and in other countries, and virtually all atomic investigations are carried on with it. At a later period I managed to produce very much higher potentials up to 18 million volts, and then I encountered unsurmountable difficulties which convinced me that it was necessary to invent an entirely different form of tube in order to carry out successfully certain ideas I had conceived. This task I found far more difficult than I had expected, not so much in the construction as in the operation of the tube. For many years I was baffled in my efforts, although I made a steady slow progress. Finally though, I was rewarded with complete success and I produced a tube which it will be hard to improve further. It is of ideal simplicity, not subject to wear and can be operated at any potential, however high, that can be produced. It will carry heavy currents, transform any amount of energy within practical limits, and it permits easy control and regulation of the same. I expect that this invention, when it becomes known, will be universally adopted in preference to other forms of tubes, and that it will be the means of obtaining results undreamed of before. Among others, it will enable the production of cheap radium substitutes in any desired quantity and will be, in general, immensely more effective in the smashing of

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atoms and the transmutation of matter. I am hopeful that it will be possible by its use to carry out a process in which there should be no misses whatever, but only hits. However, this tube will not open up a way to utilize atomic or sub-atomic energy for power purposes. According to the physical truth I have discovered there is no available energy in atomic structures, and even if there were any, the input will always greatly exceed the output, precluding profitable, practical use of the liberated energy.

Some papers have reported that I had promised to give a full description of my tube and its accessories on the present occasion. This has caused me considerable annoyance. As, owing to some obligations I have undertaken regarding the application of the tube for important purposes, I am unable to make a complete disclosure now. But as soon as I am relieved of these obligations a technical description of the device and of all the apparatus will be given to scientific institutions.

There is one more discovery which I want to announce at this time, consisting of a new method and apparatus for the obtaining of vacua exceeding many times the highest heretofore realized. I think that as much as one-billionth of a micron can be attained. What may be accomplished by means of such vacua is a matter of conjecture, but it is obvious that they will make possible the production of much more intense

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effects in electron tubes. My ideas regarding the electron are at variance with those generally entertained. I hold that it is a relatively large body carrying a surface charge and not an elementary unit. When such an electron leaves an electrode of extremely high potential and in very high vacuum it carries an electrostatic charge many times greater than the normal. This may astonish some of those who think that the particle has the same charge in the tube and outside of it in the air. A beautiful and instructive experiment has been contrived by me showing that such is not the case, for as soon as the particle gets out into the atmosphere it becomes a blazing star owing to the escape of the excess charge. The great quantity of electricity stored on the particle is responsible for the difficulties encountered in the operation of certain tubes and the rapid deterioration of the same.

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THE NEW TESLA ELECTRIC HEATER

STRICTLY CONFIDENTIAL

This device is greatly superior to the usual flat core type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.
2. The efficiency is practically the same whether the pot is large or small since the density of the rays is inversely as the diameter of the vessel.
3. Due to these features the current consumption is hardly more than half of that in the best heaters of the type referred to.
4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases. Also less wire can be used if desired.
5. The heat being largely confined to the range, the kitchen remains comparatively cool.
6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.
7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.
8. Likewise, it is suitable for all kinds of service on the table, being free from the objections of the present type.
9. It saves considerable time in certain applications.
10. Owing to simplicity, the cost of manufacturing is low.

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THE NEW TESLA ELECTRIC HEATER.

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This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals, and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

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Seventh Chapter.

What my uncle Herse said and what my ~~uncle~~ ^{uncle} Herse was; and
what Fritz said to him to make.

When the watchman was taken down the castle hill, Fritz
Schlamm had, of course, gone along, only in order to see how the
prisoner and if he would not perhaps escape, but
the latter did not come to pass. The procession moved slowly down
to the town-hall, for it had to wind its way through all
all sorts of teams and wagons, which had been sent from the
villages and the town for the transportation of the game and booty
and were now drifting to and fro in the castle-court and on the road
to the castle and surrounded by Frenchmen, that they might not
escape, for the old farmers were already devilish short ^{at} ~~at~~ this
^{game} ~~game~~. - The watchman went along with his two guardians, re-
mained as calm and also as fully calm, for though he had been
greatly frightened at first and although the whole affair of last
night was very disagreeable and serious for him, during the exami-
nation which the adjutant had instituted with him he had come into
a frame of mind, which might be described as: "Yes, you talk or!
You may say a great deal before a word of it will please me, and
his answers had turned out very droll. And although he had let in
him that wild courage which is entirely new for everything, he
had already been too long in the world and been in a scrape so of-
ten, that he did not immediately despair. He let this come as

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...and ... to ... to himself. ...

... *alderman* ... Fritz ... tells with the greatest ... yesterday, ... room and has ... broken the chief-magistrate's pipe, ... it was Wiken's fault - and that the ... chief-magistrate and ... kitchen, a picture of despair; ... nothing.

Now my uncle, *alderman* ... even if only in secret. And that had its reason. For as he whispered to me long years afterwards, when Comaparte was already dead, he used to belong at this time to the League of Virtue. And I do believe him, because when ... in company he would always play with a long watch chain of very light hair - and ... with a black - and he would always show a dangerously ... ring, with which he had once ... Huepner, a journeyman locksmith, to death, when he ... in a very impolite ... court room. - "Write". ... later, "this ... who ...

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THE NEW TESLA-ELECTRIC HEATER.

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This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin hemispherical metal tube acting as reflector and a core equipped with switch and connecting terminals and carrying space heater wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated and the heater operates as if the reflector were not present, the rays being projected from the surface of the radiating to the central or focal region occupied by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.

2. The efficiency is practically the same whether the pot be large or small since the density of the rays is inversely as the distance from the source.

3. Due to these features the current consumption

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It is really more than 100% of that in the best heaters of
the type referred to.

4. The resistor has a relatively much longer life
and can be made to last almost indefinitely in some
cases. The wire can be used if desired.

5. The heat being largely confined to the range, the
room remains comparatively cool.

6. Another practical advantage is greater safety
from a variety of accidents frequently occurring with
ordinary ranges.

7. The new heater is especially adapted for use on
ship-board, Pullman cars, aerial vehicles and automobiles.

8. Likewise, it is suitable for all kinds of service
on the table, being free from the objections of the
present heaters.

9. It saves considerable time in certain applications.

10. Owing to simplicity the cost of manufacture is low.

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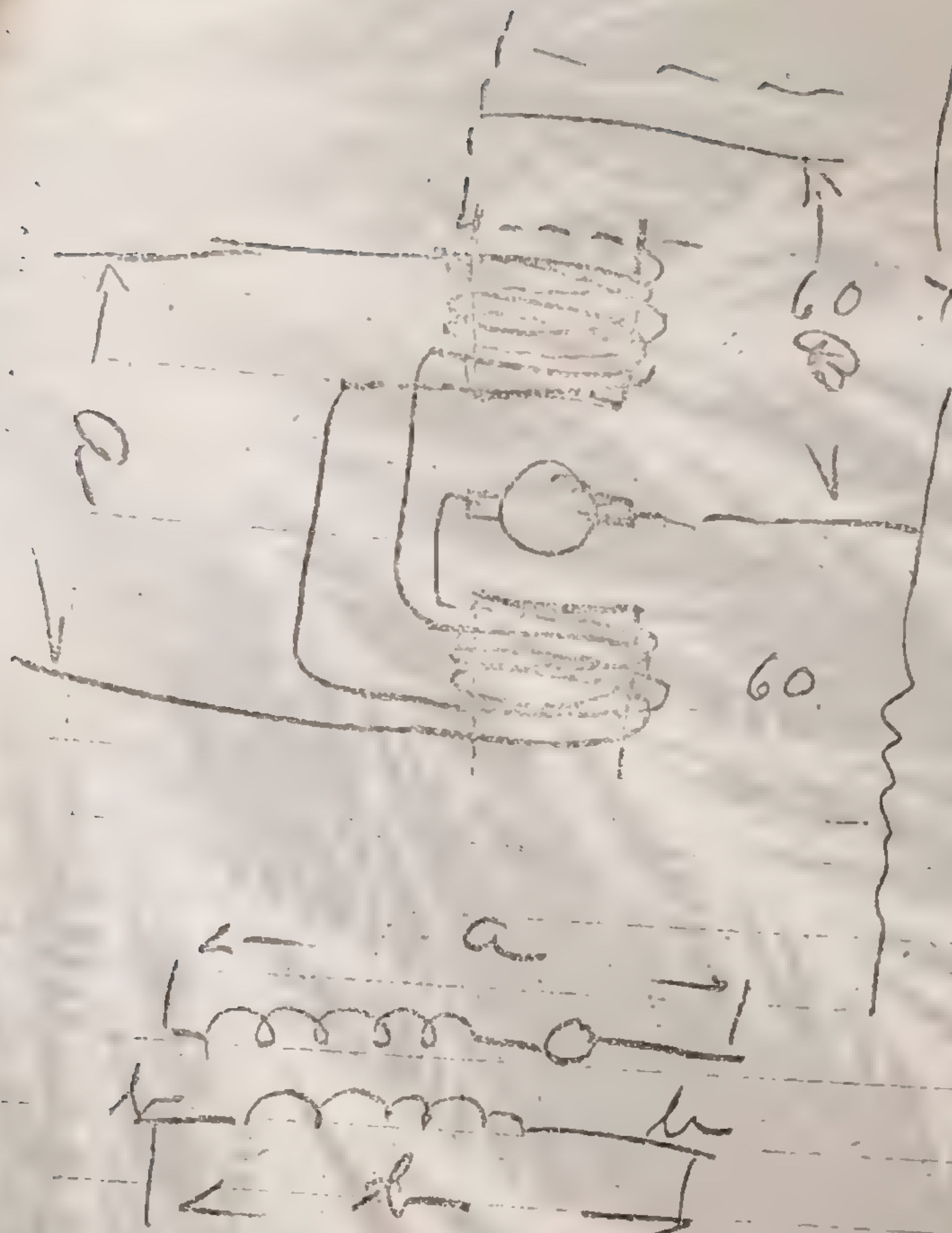
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20
 36
 25
 11

Wind field coils with two wires - winding both
 at the same time. One set of field windings
 to be connected in series, see circuit A. and
 the other set brought out. The other set of
 field windings should be connected in
 series with the armature, see circuit B.
 and circuit to take 1/20 ampere on 60 volts

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Mr. Nicholas Tesla,
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We have your favor of the 16th inst., which
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Please note we are giving this order best attention
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J. Marshall
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t.l.s., lp.

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MECHANICAL THERAPY

BY

NIKOLA TESLA

In order to convey a clear idea of the significance and revolutionary character of this discovery it is indispensable to make a brief statement regarding MECHANICAL THERAPY.

Fifty years ago, while investigating high frequency currents developed by me at that time, I observed that they produced certain physiological effects offering new and great possibilities in medical treatment. My first announcement spread like fire and experiments were undertaken by a host of experts here and in other countries. Then a famous French physician, Dr. D'Arsonval, declared that he had made the same discovery, a heated controversy relative to priority was started. The French, eager to honor their countryman, made him a member of the Academy, ignoring entirely my earlier publication. Resolved to take steps for vindicating my claim, I went to Paris, where I met Dr. D'Arsonval. His personal charm disarmed me completely and I abandoned my intention, content to rest on the record. It shows that my disclosure antedated his and also that he used my apparatus in his demonstrations. The final judgment is left to posterity.

Since the beginning, the growth of the new art and industry has been phenomenal, some manufacturers turning out daily hundreds of sets. Many millions are now in use throughout the world. The currents furnished by them have proved an ideal tonic for the human nerve system. They promote heart action and digestion, induce healthful sleep, rid the skin of destructive exudations and cure colds and fever by the warmth they create. They vivify atrophied or paralyzed parts of the body, allay all kinds of suffering and save annually thousands of lives. Leaders in the profession have assured me that I have done more for humanity by this medical treatment than by all my other discoveries and inventions. Be that as it may, I feel certain that the MECHANICAL THERAPY, which I am about to give to the world, will be of incomparably greater benefit. Its discovery was made accidentally under the following circumstances.

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Mechanical Therapy
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I had installed at the laboratory, 35 South Fifth Avenue, one of my mechanical oscillators with the object of using it in the exact determination of various physical constants. The machine was bolted in vertical position to a platform supported on elastic cushions and, when operated by compressed air, performed minute oscillations absolutely isochronous, that is to say, consisting rigorously equal intervals of time. So perfect was its functioning in this respect that clocks driven by it indicated the hour with astronomical precision. One day, as I was making some observations, I stepped on the platform and the vibrations imparted to it by the machine were transmitted to my body. The sensation experienced was as strange as agreeable, and I asked my assistants to try. They did so and were mystified and pleased like myself. But a few minutes later some of us, who had stayed longer on the platform, felt an unspeakable and pressing necessity which had to be promptly satisfied, and then a strenuous truth dawned upon me. Evidently, these isochronous rapid oscillations stimulated powerfully the peristaltic movements which propel the food-stuffs through the alimentary channels. A means was thus provided whereby their contents can be perfectly regulated and controlled at will, and without the use of drugs, specific remedies or internal applications whatever.

When I began to practice with my assistants MECHANICAL THERAPY we used to finish our meals quickly and rush back to the laboratory. We suffered from dyspepsia and various stomach troubles, biliousness, constipation, flatulence and other disturbances, all natural results of such irregular habit. But after only a week of application, during which I improved the technique and my assistants learned how to take the treatment to their best advantage, all these forms of sickness disappeared as by enchantment and for nearly four years, while the machine was in use, we were all in excellent health. I cured a number of people, among them my great friend

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Mark Twain whose bones saved my life. He came to the laboratory in the great ship suffering from a variety of distressing and dangerous ailments but in less than a month he regained his old vigor and ability of enjoying life to the fullest extent. Shortly after, a great calamity befall me: my laboratory was destroyed by fire. Nothing was insured and the loss of priceless apparatus and records gave me a terrific shock from which I did not recover for several years. The enforced discontinuance of my electrical therapy also caused me deep regret. I had evolved a wonderful remedy for all of inestimable value to mankind and invented apparatus offering unrivaled commercial possibilities but when I came to consider practical introduction I realized that it was entirely unsuitable. It was big, heavy and noisy, called for a continuous supply of oil, part of which was discharged in the room as fine spray; it consumed considerable power and required a number of objectionable accessories. During the succeeding years I made great improvements and finally evolved a design which leaves nothing to be desired. The machine will be very small and light, operate noiselessly without any lubricant, consume a trifling amount of energy and will be, to my knowledge, the most beautiful device ever put on the market. The intention is to exhibit it in action at the occasion of my annual reception in honor of the Press which has been, unfortunately, delayed this year, and I anticipate that it will elicit great interest and receive wide publicity. Unless I am grossly mistaken it will be introduced very extensively and, eventually, there will be one in every household.

The practical application of MECHANICAL THERAPY through my oscillators will profoundly affect human life. By insuring perfect regularity of evacuations the body will function better in every respect

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- 4 -

and life will become ever so much safer and more enjoyable. One of the most important results will be the great reduction -- amounting possibly to seventy-five per cent -- in the number of heart failures, which are mostly caused by some acute upset of the digestive process and a total oxidation of the stomach. Another vital improvement will be derived from the quickened removal of toxic excretion of organs affected by disease. It is reasonable to expect that through this and other healthful actions ulcers and similar internal lesions or abscesses will be cured and relief might be obtained even in case of a cancer or other malignant growth. Skilled physicians and surgeons will be able to perform veritable miracles with such oscillations. They stimulate strongly the liver, spleen, kidneys, bladder and other organs and by these desirable actions they must contribute not a little to well-being. Persons suffering from anemia of any form will be especially helped by the treatment. But the greatest benefit will be derived from it by women who will be able to reduce without the usual tantalizing abstinence, privation, sacrifice of time and money and torture they have to endure. They will improve much in appearance, acquire clear eyes and complexions and it may be safely predicted that long continued treatment will bring forth feminine beauty never seen before. It is not to be forgotten that the elimination of countless drugs, patent medicines and specific remedies of all kinds taken internally, by which millions of people doom themselves to an early grave, will be of untold good to humanity.

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WALFRANK SPERRY
COMPTROLLER

State of New York.
Comptroller's Office.

OFFICE OF
CORPORATION TAX COMMISSIONER,
257 Broadway, New York City.

New York.

Rec 7/07

To *Nikola Tesla Co.*
Babylon D.D.
Waldorf Astoria Hotel City

Dear Sirs:--I am commissioned by the Comptroller of the State of New York to examine the above named Company relative to taxation.

This matter has been set down for hearing on the day of *Dec* 190 *7*, at *113*. The President, Secretary or Treasurer, or, in their absence, the New York Manager of the Company, is required to appear for examination at that time. In case of failure to attend and give evidence in this matter, the company will be taxed, on the maximum amount, on information in possession of the department.

Revision of each assessment can be had at the office of this department in Albany, on proper application.

Respectfully yours,

William S. Francis

Corporation Tax Commissioner.

COMM. DEPT.

Form No. 1.

WESTERN UNION TELEGRAPH COMPANY,
INCORPORATED
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ITS messages are on conditions limiting its liability, which have been accepted by the sender of the following message.
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THESE REPEATED MESSAGES are delivered by request of the sender, under the conditions named above.

THOS. T. ECHERT, President and General Manager.

7:10 am

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Dated

To

July 12th 190

George Scherff

of Julia Marks M. Cleffe NY
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HT MESSAGES AT REDUCED RATES.

40 E. Houston Street March 23. 1900.

My dear Mr. Buckle,

Many thanks for the tablets, I think they are good. As to the rose deinde I have a horror of it such that I would rather go to Hades than to the Elysium if it were at the price.

Enclosed forward article roasting my illustrious friend Sir William Crookes who is turning water out by mill. I will drop the adjective - "distinguished" would not do. Luke is mistaken, this is literary style. Crookes is not distinguished, he is illustrious.

I have not forgotten the letter to be furnished in improved and finished form. Was it for June of this or next year?

Please tell my friend Luke that I expect to send it by mail.

Sincerely

H. T. T. T.

LA SPEAKS OUT

of comment
of the
incandescent
system of dis-
the perform-

the lamp

all known
from the first before
the incandescent
conductors with leading-in platinum
wires sealed in the glass and filled
extremely high vacuum; the multiple-arc
arrangement was frequently shown at
institutions of learning, display win-
dows and exhibitions with Geissler
tubes; electric generators had been
constructed, means for regulating cur-
rent and voltage described, and canal-
ization of electricity was as obvious as
that of water, gas, compressed air or
other commodity.

Irrespective of this, however, his
primitive scheme of lighting was sub-
ject to fatal economic limitations and
could have never proved a commercial
success in competition. Indeed, during
the past thirty-five years it has been
almost wholly displaced by a more
practical and efficient system based on
my rotating magnetic field, a discovery
which even hard-headed engineers and
patent lawyers have declared to be "one
of the greatest triumphs of the human
mind." To convey an idea of the ex-
tent of its use I only need to quote
Dr. B. A. Behrend, one of the foremost
electrical experts, who in his book on
the induction motor, says: "Were we
to eliminate from our industrial world
the results of Mr. Tesla's work the
wheels of industry would cease to turn,
our electric trains and cars would stop,
our towns would be dark, our mills
dead and idle. So far-reaching is this
work that it has become the warp and
wool of industry."

Edison and his associates bitterly op-
posed the introduction of my system,
raising a clamor against the "deadli-
ness" of the alternating current, which
proved very effective and led to the
adoption of a commercial type of ma-
chine in the electrocution of criminals,
an apparatus monstrously unsuitable,
for the poor wretches are not de-
spatched in a merciful manner but lit-
erally roasted alive. To the observer
their sufferings seem to be of short du-
ration; it must be borne in mind,
though, that an individual under such
conditions, while wholly bereft of the
consciousness of the lapse of time, re-
tains a keen sense of pain, and a min-
ute of agony is equivalent to that
through all eternity.

Had the Edison companies not finally
adopted my invention they would have
been wiped out of existence, and yet
not the slightest acknowledgment of
my labors has ever been made by any
of them, a most remarkable instance of
the proverbial unfairness and ingrati-
tude of corporations. But the reason
is not far to seek. One of their promi-
nent men told me that they are spend-
ing \$10,000,000 every year to keep Edi-
son's name before the public, and he
added that it is worth more to them.

Of course, in all that unceasing and
deafening shouting from the house-
tops any voice raised to apprise people
of the real state of things is like the
chirp of a little sparrow in the roar of
Niagara. So it comes that very few
have a clear idea of the situation.

In truth, my system has not only
provided energy for all purposes
throughout the world but also revo-
lutionized electric lighting and made
it a great commercial success by reduc-
ing the cost of power and increasing
enormously the distance of transmis-
sion. The greater part of the \$60,000-
000,000 which, according to President
Hoover's statement, represented the
value of electric business, can be traced
to my system and its effect on the
lighting and other industries. In view
of this I feel that I also have done
much to dispel darkness. Surely, my
system is more important than the
incandescent lamp, which is but one of
the known electric illuminating devices
and admittedly not the best. Although
greatly improved through chemical and
metallurgical advances and skill of ar-
tisans, it is still inefficient, and the
glaring filament emits hurtful rays re-
sponsible for millions of bald heads
and spoiled eyes. In my opinion, it
will soon be superseded by the elec-
trodeless vacuum tube which I brought
out thirty-eight years ago, a lamp
much more economical and yielding a
light of indescribable beauty and soft-
ness. The technical resources of that
time were inadequate to make it a
practical success, but most of the dif-
ficulties will be overcome when cheap
quartz glass becomes available.

No amount of praise is too much to
bestow upon Edison for his vigorous
pioneer work, but all he did was
wrought in known and passing forms.
What I contributed constitutes a new
and lasting addition to human knowl-
edge. Like his lamp, my induction
motor may be discarded and forgotten
in the continuous evolution of the arts,
but my rotating field with its mar-
velous phenomena and manifestations
of force will live as long as science
itself.

NIKOLA TESLA

New York, Nov. 5.

Nikola Tesla

Mr Tesla Speaks out
To the Editor of the World:

Permit me a few words of comment relative to ~~my~~
editorial of October 21st in which I am directly concerned.

My work on the incandescent lamp and direct current system of distribution was more like the performance of an extraordinarily energetic and horse-sensed pioneer than that of an inventor; it was prodigious in amount, but not creative. The lamp itself, consisting of a carbon filament in an exhausted globe, was well known and even patented years before; Crookes had employed incandescent conductors with leading-in platinum wires sealed in the glass and obtained extremely high vacua; the multiple arc arrangement was frequently shown at institutions of learning, display windows and exhibitions with Geissler tubes; electric generators had been constructed, means for regulating current and voltage described and canalization of electricity was as obvious as that of water, gas, compressed air or other commodity. Irrespective of this, however, his primitive scheme of lighting was subject to fatal economic limitations and could have never proved a commercial success in competition. Indeed, during the past thirty-five years it has been almost wholly displaced by a more practical and efficient system based on my rotating magnetic field, a discovery which even hard-headed engineers and patent lawyers have declared to be "one of the greatest triumphs of the human mind." To convey an idea of the extent of its use, I only need to quote Dr B.A. Behrend, one of the foremost electrical experts, who in his book on the induction motor says: "Were we to eliminate from our industrial world the results of Mr Tesla's work, the wheels of industry would cease to turn, our electric trains and cars would stop, our towns would be dark, our mills dead and idle. So far-reaching is this work that it has become the warp and woof of industry."

Edison and his associates bitterly opposed the introduction of my system, raising a clamor against the "deadliness" of the alternating current, which proved very effective and led to the adoption of a commercial type of machine in the electrocution of criminals, an apparatus monstrously unsuitable, for the poor wretches are not dispatched in a merciful manner but literally roasted alive. To the observer their sufferings seem to be of short duration; it must be borne in mind though, that an individual under such conditions, while wholly bereft of the consciousness of the lapse of time, retains a keen sense of pain, and a minute of agony is equivalent to that through all eternity.

✓ Had the Edison companies not finally adopted my invention, they would have been wiped out of existence, and yet not the slightest acknowledgment of my labors has ever

FROM
COLUMBIA
UNIVERSITY
TO NEW YORK
NOV 5, 1929

-2-

made by any of them, a most remarkable instance of the proverbial unfairness and ingratitude of corporations. But the reason is not far to seek. One of their prominent men told me that they are spending ten million dollars every year to keep Edison's name before the public, and he added that it is worth more to them. Of course, in all that unceasing and deafening shouting from the housetops, any voice raised to apprise people of the real state of things is like the chirp of a little sparrow in the roar of Niagara. So it comes that very few have a clear idea of the situation. In truth, my system has not only provided energy for all purposes throughout the world, but also revolutionized electric lighting and made it a great commercial success by reducing the cost of power and increasing enormously the distance of transmission. The greater part of the sixty billions of dollars which, according to President Hoover's statement, represented the value of electric business, can be traced to my system and its affect on the lighting and other industries. In view of this I feel that I also have done much to dispel darkness. Surely, my system is more important than the incandescent lamp, which is but one of the known electric illuminating devices and admittedly not the best. Although greatly improved through chemical and metallurgical advances and skill of artisans, it is still inefficient and the glaring filament emits hurtful rays responsible for millions of bald heads and spoiled eyes. In my opinion, it will soon be superseded by the electrodeless vacuum tube which I brought out thirty-eight years ago, a lamp much more economical and yielding a light of indescribable beauty and softness. The technical resources of that time were inadequate to make it a practical success, but most of the difficulties will be overcome when cheap quartz glass becomes available.

No amount of praise is too much to bestow upon Edison for his vigorous pioneer work, but all he did was wrought in known and passing forms. What I contributed constitutes a new and lasting addition to human knowledge. Like his lamp, my induction motor may be discarded and forgotten in the continuous evolution of the arts, but my rotating field with its marvelous phenomena and manifestations of force will live as long as science itself.

New York, November 5, 1925.

Nikola Tesla

408 West 40th St
N.Y.C.

New York, July 12th, 1900.

46 & 48 East Houston Street.

Rev. William E. Davenport,

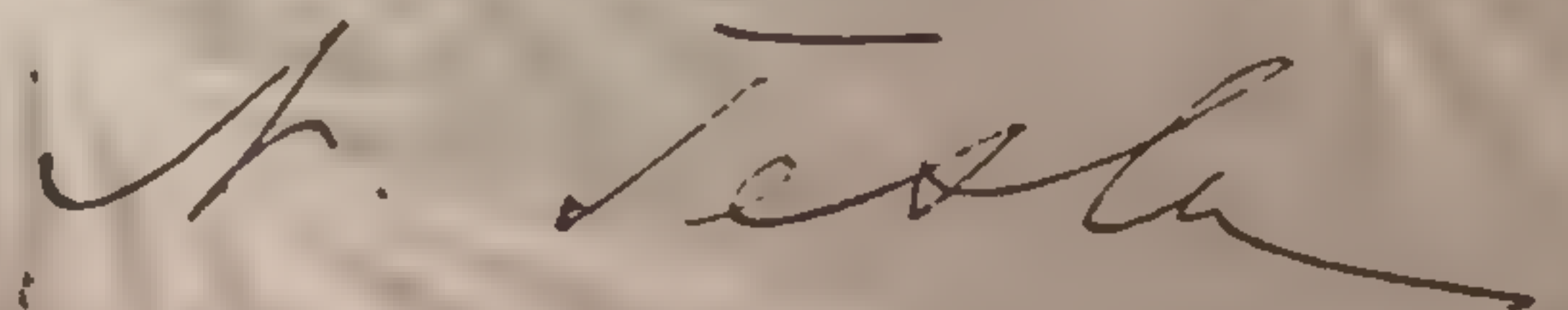
Italian Mission,

29 Front Str., Brooklyn, N. Y.

Reverend Sir:-

In reply to your note to the Century Magazine, which has been forwarded to me through the courtesy of the Editor, I beg to say that I shall be at your service any time during the day, at my office, above address.

Yours respectfully,



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Es ist mir ein grosses Bedauern, dass Ihr hoeffliches Ansuchen, gemacht bei
einer Gelegenheit, ~~in~~ ⁱⁿ dem Leben Ihres Jour-
nals, zu widerstehn. Ihr Brief hat die Erinnerung an unsere begin-
nende Freundschaft, ~~an~~ ^{Beziehungen} die ersten unvollkommenen ~~Vorlesungen~~ ^{Dienste} und unver-
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~~Er hat~~ ^{Auch sehr} die Groesse fruher Erwartungen, ~~das~~ ^{den} schnelle ~~Entfaltungen~~ ^{Leben} der
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Gegen Ende des Jahres 1898 fuehrte mich eine systemati-
sche Forschung, der ich seit Jahren obgelegen hatte in der Absicht
eine Methode elektrischer Energieuebertragung durch das natuerliche
Medium zu vervollkommen, zu der Erkenntnis drei wichtiger Erfor-
dernisse: erstens, die Entwicklung eines Senders von grosser Kraft;
zweitens, die Vervollkommenung von Mitteln zur Individualisierung
und Absonderung der uebertragenen Energie; und, drittens, die Fest-
stellung der Gesetze der Fortpflanzung von Stromen durch die Erde

DIE UEBERTRAGUNG ELEKTRISCHER ENERGIE OHNE DRAHT.

(Mitgeteilt in Electrical World and Engineer, 5 Maerz, 1904.)

Von Nikola Tesla.

Es ist unmoeglich Ihren hoefflichen Ansuchen, ~~gemacht~~ bei einer Gelegenheit ~~in dem Leben Ihres Journals~~ ^{in dem Leben Ihres Journals} zu widerstehn. Ihr Brief hat die Erinnerung an unsere beginnende Freundschaft, an die ersten unvollkommenen ~~Veruche~~ ^{Beobachtungen} und unerdienten Erfolge, ~~Gefaelligkeiten~~ ^{Dienste} und Missverstaendnisse neu belebt. ~~Er hat~~ ^{Auch schmerzlich} die Groesse fruherer Erwartungen, ~~den~~ ^{den} schnelle ~~Entfaltungen~~ ^{Entfaltungen} der Zeit und, ~~aus~~ ^{leider!} die Kleinheit der Verwirklichungen ~~in schmerzlich ins Gedachtnis gerufen.~~ Die folgenden Zeilen, welche, ~~waere es nicht wegen Ihrer Anregung,~~ vielleicht eine lange Zeit der Oeffentlichkeit noch nicht uebergaben worden waeren, sind ein Anerbieten in der freundlichen Stimmung von Alters her, und meine besten Wuensche auf Ihren zukuenftigen Erfolg begleiten sie.

Gegen Ende des Jahres 1898 fuehrte mich eine systematische Forschung, der ich seit Jahren obgelegen hatte in der Absicht eine Methode elektrischer Energieuebertragung durch das natuerliche Medium zu vervollkommen, zu der Erkenntnis drei wichtiger Erfordernisse: erstens, die Entwicklung eines Senders von grosser Kraft; zweitens, die Vervollkommenung von Mitteln zur Individualisierung und Absonderung der uebertragenen Energie; und, drittens, die Feststellung der Gesetze der Fortpflanzung von Stroemen durch die Erde

und die Atmosphäre. Verschiedene Gründe, von denen nicht der
Springen — mir von meinem Freunde Leonard E. Curtis und der Co-
lorado Springs Electric Company angebotene Hilfe war, bewogen mich,
für meine experimentellen Untersuchungen das grosse Plateau, zwei
tausend Meter ueber der Meeresflaeche, in der Naehc dieses reizenden
Kurortes zu waehlen, welchen ich spaet im Mai 1899 erreichte.
Kaum war ich einige Tage dort gewesen, als ich mich schon zu der
gluecklichen Wahl gratulieren konnte, und ich begann die Aufgabe,
für welche ich mich lange geschult hatte, mit dankbarem Sinne und
voll begeisternder Hoffnung. Die vollkommene Reinheit der Luft,
die unvergleichliche Schoenheit des Himmels, der erhabene Anblick
einer hohen Gebirgskette — alles rund umher trug dazu bei, die Be-
dingungen für wissenschaftliche Beobachtungen ideal zu machen.
Dazu kam noch der belebende Einfluss eines herrlichen Klimas und
eine eigenartige Verschaeerfung der Sinne. Die Organe unterziehen
sich in jenen Regionen merklichen physikalischen Veraenderungen.
Die Augen nehmen eine ausserordentliche Klarheit an, was die Seh-
kraft verbessert; die Ohren troeknen aus und werden empfindlicher
gegen Schall. Man kann dort Gegenstaende auf soch grosse Entfer-
nungen unterscheiden, dass ich vorziehe, diese von jemand anders
nennen zu lassen, und ich habe — dies kann ich zu bezeugen wagen —
sieben und acht hundert Kilometer weit entfernte Donnerschlaege ge-
hoert. Ich haette sie auf noch groessere Entfernungen hoeren Koen-
nen, wenn es nicht langweilig gewesen waere, die Ankunft der Laute,

... Zwischenräumen erfolgte, genau wie sie - fast
... Voraus - von einem elektrischen Anzeigeapparat an-
... zu erwarten.

In der Mitte des Monats Juni, während Vorbereitungen
auf andere Arbeit vor sich gingen, stellte ich einen meiner Emp-
fangstransformatoren auf in der Absicht, auf eine neue Weise, ex-
perimentell, das elektrische potentiell der Erdoberfläche zu bestimmen
und dessen periodische und gelegentliche Schwankungen zu beobach-
ten. Dies war ein Teil eines sorgfältig im Voraus entworfenen
Plans. Eine höchst empfindliche, sich selbst wiederherstellende
Vorrichtung, welche ein registrierendes Instrument kontrollierte,
war in den sekundären Stromkreis eingeschaltet, während die Pri-
maere mit der Erde und mit einem erhobenen Pol von regulierbarer
Kapazität verbunden war. Die Variationen des Potentiells verur-
sachten elektrische Wogungen in der Primaere; diese erzeugten sekun-
däre Ströme, die wiederum auf die empfindliche Vorrichtung und
den Registrator im Verhältnis zu ihrer Intensität einwirkten. Es
stellte sich heraus, dass die Erde buchstäblich mit elektrischen
Schwingungen belebt war, und bald war ich fast gänzlich in dieser
interessanten Forschung vertieft. Bessere Gelegenheiten zu solchen
Beobachtungen wie ich zu machen beabsichtigte konnten nirgends ge-
funden werden. Colorado ist ein Land, das wegen der Entfaltung na-
tuerlicher elektrischer Kraft beruehmt ist. In der trockenen und
verduenneten Atmosphaere scheint die Sonne mit gruenniger Intensitaet

Ich entwickelte Dampf bis auf einen
grossen Druck in mit konzentrierter Salzlosung getauchten
Batterien, und die Staniolheberzuege einiger meiner erhoehten Pole
schrumpften in der feurigen Glut zusammen. Ein experimenteller
Hochspannungstransformator, der unvorsichtigerweise den Strahlen
der untergehenden Sonne ausgesetzt worden war, wurde durch das
Herausschmelzen der Isolationsmischung verderben. Die Trockenheit
und Duernheit der Luft traegt dazu bei, dass das Wasser wie in ei-
nem Kessel verdampft, und statische Elektricitaet entwickelt sich
in grosser Menge. Blitzentladungen sind demgemass sehr Haeufig
und mitunter von unbegreiflicher Heftigkeit. Bei einer Gelegenheit
fanden in zwei Stunden annaehernd zwolff tausend Entladungen statt,
und alle in einem Radius von gewiss weniger als fuenfzig Kilometer
vom Laboratorium. Viele derselben glichen riesenhaften Baemen
aus Feuer mit den Staemmen nach oben oder unten. Kugelblitze habe
ich nicht gesehen, aber als Belohnung fuer meine Enttauschung ge-
lang es mir spaeter, die Art ihrer Bildung zu bestimmen und sie
kuenstlich zu erzeugen.

Am Ende desselben Monats bemerkte ich mehrere Male, dass
meine Instrumente durch Entladungen, die in grosser Entfernung
stattfanden, staerker beeinflusst wurden, als durch solche in der
Naehة. Das war fuer mich ein grosses Raetsel. Was war die Ur-
sache? Eine Reihe von Beobachtungen bewies, dass es nicht von dem
Unterschiede in der Intensitaet zwischen den einzelnen Entladun-

Es war an demselben Tage, als ich feststellte, dass das Licht nicht das Resultat eines variierenden Stromes zwischen den Perioden meiner Empfaengerstromkreise und den der irdischen Störungen war. Eines Abends, als ich mit einem Assistenten an der Lampe und ueber diese Erfahrungen nachsann, ueberwaeltigte mich ploetzlich ein Gedanke. Vor Jahren, als ich ein Kapitel meines Vortrages vor dem Franklin Institute und der National Electric Light Association schrieb, war er mir auch eingefallen, aber ich hatte ihn als absurd und unmoeglich verworfen. Ich verbannte ihn wieder. Mein Instinkt war jedoch nach gerufen, und ich fuehlte irgendwie, dass ich mich einer grossen Offenbarung naeherte.

Es war am dritten Juli - das Datum werde ich nie vergessen - als ich den ersten entscheidenden, experimentellen Beweis einer Wahrheit von ueberwaeltigender Wichtigkeit fuer den Fortschritt der Menschheit erhielt. Eine dunkle, stark geladene Wolkenmasse sammelte sich im Westen. Gegen Abend brach ein heftiges Gewitter los, welches, nachdem es einen betraechtlichen Teil seiner Gewalt in den Bergen von sich gegeben hatte, mit grosser Geschwindigkeit ueber die Ebene dahingejagt wurde. Dicke und lang anhaltende Bogen bildeten sich in fast regelmaessigen Zwischenraeumen. Meine Beobachtungen waren nun sehr erleichtert, und die schon gewonnenen Erfahrungen machten sie genauer. Ich war instande, meine Instrumente schnell zu manipulieren und ich war vorbereitet. Da der Registrier-

... wurden seine Anschlaege mit der zu-
nahme des Gewitters schwaecher und schwaecher, bis
sie ... Ich beobachtete in begieriger Erwartung.
Und ... nach einer kleinen Weile fingen die Anschlaege wieder
an, wurden staerker und staerker und, nachdem sie ein Maximum ue-
berschritten hatten, wurden sie allmaehlich schwaecher und hoerten
wieder auf. Viele Male wiederholten sich dieselben Wirkungen in
regelmassig wiederkehrenden Zwischenraeumen bis der Sturm, der,
wie einfache Berechnungen erwiesen, sich mit fast gleichmaessiger
Geschwindigkeit bewegte, sich auf eine Entfernung von etwa dreihun-
dert Kilometer zurueckgezogen hatte. Und auch dann liessen diese
seltsamen Wirkungen noch nicht nach, sondern fuhren fort, sich mit
unverminderter Staerke zu offenbaren. Spaeter wurden aehnliche Be-
obachtungen auch von meinem Assistenten, Herrn Fritz Loewenstein,
gemacht, und kurz nachher boten sich mehrere vortreffliche Gelegen-
heiten dar, die das wirkliche Wesen des wunderbaren Phaenomens noch
kraeftiger und unverkennbar an den Tag brachten. Es blieb kein
Zweifel; Ich beobachtete stehende Wellen.

Indem die Quelle der Stoerungen sich fortbewegte, kam der
Empfaengerstromkreis nacheinander auf ihre Knoten- und Bauchpunkte.
So unmoeglich es auch schien, verhielt sich dieser planet, trotz
seines gewaltigen Umfanges, wie ein Leiter von beschränkten Dimen-
sionen. Die ungeheure Bedeutung dieser Tatsache fuer die Uebertra-
gung von Energie nach meinem System war mir schon ganz klar gewor-

den. Nur war es möglich, ohne Draht telegraphische Botschaften über eine kleinere Entfernung zu senden, was ich schon vor langer Zeit nicht nur hatte, sondern auch die schwachen Modulationen der menschlichen Stimme konnten der ganzen Erdoberfläche aufgeprägt werden, und vielmehr noch, man konnte Kraft in unbegrenzten Quantitäten auf jede beliebige irdische Entfernung und fast ohne Verlust übertragen.

Mit diesen erstaunlichen Möglichkeiten in Aussicht, mit dem experimentellen Beweise vor mir, dass ihre Verwirklichung von nun an nur eine Frage von Fachkenntnis, Geduld und Geschicklichkeit war, nahm ich die Entwicklung meines Sendemultiplikators kräftig in Angriff, jetzt jedoch nicht so sehr mit der ursprünglichen Absicht, einen solchen von grosser Kraft zu erzeugen, sondern vielmehr zu dem Zwecke, den besten konstruieren zu lernen. Dies ist im Wesentlichen ein Stromkreis sehr hoher Selbstinduktion und geringen Widerstandes, den man wol einem typischen, in der Telegraphie mit Hertz'schen oder elektromagnetischen Wellen benutzten Stromkreise als gerade entgegengesetzt bezeichnen kann. Es ist schwer, sich von der wunderbaren Kraft dieser eigenartigen Vorrichtung einen Begriff zu machen. Da die elektromagnetischen Strahlungen auf eine unbedeutende Quantität herabgesetzt und richtige Resonanzverhältnisse aufrecht erhalten werden, wirkt der Stromkreis wie ein ungeheures Pendulum, indem er die primären Erregerimpulse unbegrenzt aufspeichert und der Erde und ihrer leitenden Atmosphäre gleich-

formen harmonische Schwingungen aufweist, deren Intensitäten, wie elektrische Versuche gezeigt haben, so weit gesteigert werden können, dass sie diejenigen, welche bei der natürlichen Entladung statischer Elektrizität erreicht werden, übertreffen.

Gleichzeitig mit diesen Bestrebungen wurden auch die Mittel der Individualisierung und Absonderung der Energie allmählich verbessert. Grosse Wichtigkeit wurde dieser Arbeit beigemessen, denn es fand sich, dass einfaches Abstimmen nicht hinreichte, um den strengen praktischen Erfordernissen gerecht zu werden. Die fundamentale Idee, zum Zwecke der Absonderung der übertragenen Energie eine Anzahl absonderlicher, kooperativ-vereinigter Elemente anzuwenden, führe ich direkt auf meine Lektüre von Spencer's klarer und anregender Auslegung des menschlichen Nervenmechanismus zurück. Welchen Einfluss dieses Prinzip auf die Übertragung von Intelligenz und elektrischer Energie im Allgemeinen haben wird, kann jetzt noch nicht abgeschätzt werden, denn die Kunst ist noch im Keinzustande; aber die gleichzeitige Übermittlung von tausenden von telegraphischen oder telephonischen Botschaften durch einen einzigen Leitungskanal, sei er natürlich oder künstlich, ohne gefährliche gegenseitige Störung, ist gewiss thunlich, während Millionen möglich sind. Andererseits kann durch Anwendung einer grossen Anzahl kooperativer Elemente und willkürliche Absonderung ihrer absonderlichen Eigenschaften und ihrer Reihenfolge ~~irgen~~ ein beliebiger Grad der Individualisierung erreicht werden. Aus augenscheinli-

chen Gruenden wird dieses Prinzip auch fuer die Erweiterung der Uebertragungsentfernung von Wert sein.

Der Fortschritt, obgleich notwendigerweise langsam, war bestaendig und sicher, denn die Ziele, nach denen ich strebte, waren in der Richtung meiner fortwachsenden Studien und Taetigkeit. Es ist deshalb kein Wunder, dass ich schon vor Ende des Jahres 1899 die unternommene Aufgabe beendete und die Resultate erreichte, welche ich in meinem Artkel im Century Magazine vom Juni, 1900, in dem jedes Wort sorgfaeltig gewogen wurde, anzeigte.

Es ist schon viel getan, um mein System kommerziellem Gebrauch zur Verfuegung zu stellen, sowol zur Uebertragung von Energie in kleinen Quantitaeten fuer spezifische Zwecke, als auch auf industriellem Maassstabe. Die von mir erzielten Resultate haben meinen Plan der Intelligenzuebermittlung; fuer welche der Name "Welttelegraphie" vorgeschlagen worden ist, leicht ausfuehrbar gemacht. Das Prinzip ihrer Wirkung, die angewandten Mittel und ihre Anwendungsfahigkeiten bilden, glaube ich, eine radikale und fruchtbare Abweichung von dem, was vorher getan worden ist. Ich habe keinen Zweifel, dass sie sich fuer die Aufklaerung der Massen, besonders in noch uncivilisierten Laendern und schwer zuganglichen Regionen, sehr wirksam erweisen, und dass sie zur allgemeinen Sicherheit, Bequemlichkeit und Wolsein, und der Aufrechterhaltung friedlicher Verhaeltnisse wesentlich beitragen wird. Sie bedingt die Anwendung einer Anzahl von Anlagen, welche alle imstande sind,

individualisierte Signale nach den äussersten Grenzen der Erde zu senden. Jede derselben wird vorzugsweise in der Nähe eines wichtigen Civilisationspunktes gelegen sein, und die Nachrichten, welche sie durch beliebige Mittel und Wege empfängt, werden nach allen Punkten der Erde geblickt. Eine billige und einfache Vorrichtung, die man in der Tasche tragen könnte, kann dann irgendwo auf See oder Land aufgestellt werden, und wird die Neuigkeiten der Welt, oder solche spezielle Depeschen, die fuer sie bestimmt sind, verzeichnen. Auf diese Weise wird die ganze Erde so zu sagen in ein riesiges Gehirn verwandelt werden, welches instande ist, in jedem Teile die Mitteilungen aufzunehmen. Da eine einzige Anlage von nur hundert Pferdestaerken hunderte Millionen von Instrumenten betätigen kann, wird das System ein tatsaechlich unbegrenztes Arbeitsvermoegen haben, und muss notwendigerweise die Uebermittlung von Intelligenz ungeheuer erleichtern und billiger machen.

Die erste dieser Centralanlagen waere schon beendet, wenn sich nicht unvorhergesehene Verzoegerungen eingestellt haetten, die jedoch gluecklicherweise nichts mit dem rein technischen Charakter zu tun haben. Aber dieser Zeitverlust, obgleich verdriesslich, duerfte sich schliesslich doch als ein Segen in Verkleidung erweisen. Die beste mir bekannte Konstruktion ist gewaehlt worden, und der Sender wird einen Wellenkomplex von einer gesamten maximalen Aktivitaet von zehn Millionen Pferdestaerken, von welcher ein Prozent reichlich genug ist, "die Erdkugel zu unguerten", von sich geben. Der Effekt dieser ungeheuren Energieabgabe, fast zweimal so

sel als die gesanten Niagara-falle, kann nur durch Anwendung gewisser Kunstgriffe, die ich seiner Zeit bekannt machen werde, erzielt werden.

~~Der~~ Einen grossen Teil der Arbeit, die ich bis jetzt getan habe, habe ich der edlen Grossmutter Herrn J. Pierpont Morgan's zu verdanken, die mir so willkommener und ermutigender war, weil sie zu einer Zeit gewahrt wurde als diejenigen, die seitdem am meisten versprochen haben, die grosssten Zweifler waren. Auch meinen Freund Stanford White muss ich fuer viele uneigennuetzige und wertvolle Hilfe danken. Diese Arbeit ist nun weit vorgeschritten, und wenn auch die Resultate verspätet sind, werden sie doch sicher kommen.

Die Uebertragung von Energie auf industriellem Maassstabe wird mittlerweile nicht vernachlaessigt. Die Canadian Niagara Power Company hat mir ein vorzuegliches Angebot gemacht, und eine fast eben so grosse Genugthuung als das Erringen von Erfolg der Kunst halber wird es mir verschaffen, ihre Konzession fuer sie finanziell vorteilhaft zu machen. In dieser ersten Kraftanlage, mit deren Entwurf ich seit langer Zeit beschaeftigt bin, beabsichtige ich, zehn tausend Pferdekraefte unter einer Spannung von hundert Millionen Volt, die ich jetzt mit Sicherheit erzeugen und haben kann, zu verteilen.

Diese Energie wird ueberall auf der Erde gesammelt werden, vorzugsweise in kleinen Quantitaeten, von einem Bruchteil einer bis

mehr als 100.000. Einer ihrer Hauptanwendungen wird die
Bauweise von kleinen, isolierten Heimstationen sein. Es ~~bedeutet~~ ^{bedeutet}
sich um ein Haus, eine Wohnung mit Vakuumrohren, die von Hochfre-
quenzstrahlen erregt werden, zu erleuchten, und in jedem Falle wird
ein ein wenig ueber dem Dach erhabener Pol hinreichen. Noch ein
wertvoller Gebrauch wird das Anreiben von Uhren und dergleichen
Apparate sein. Diese Uhren werden ausserordentlich einfach sein,
werden absolut keiner Wartung beduerfen und werden genau die rich-
tige Zeit angeben. Die Idee der Erde amerikanische Zeit aufzuprae-
gen ist bezaubernd und wird sehr wahrscheinlich populaer werden.
Es giebt unzählbare Vorrichtungen aller Arten, die entweder jetzt
im Gebrauch sind oder geliefert werden koennen, und indem ich sie
auf diese Weise in Betrieb setze, duerfte ich instande sein, mit
einer Anlage von nicht mehr als zehn tausend Pferdestaerken der
ganzen Welt eine grosse Kommoditaet zu bieten. Die Einfuehrung die-
ses Systems wird Gelegenheiten gewahren fuer Erfindung und Fabri-
kation, wie sie sich noch nie vorher dargeboten haben.

Da ich der weitreichenden Wichtigkeit dieses ersten Ver-
suchs und dessen Einfluss²⁵ auf zukuenftige Entwicklung gewaertig
bin, werde ich langsam und sorgfaeltig zu Werke gehen. Erfahrung
hat mich gelehrt fuer Unternehmungen, die nicht gaenzlich von mei-
nen eigenen Faehigkeiten und Anstrengungen abhaengen, einen Termin
festzusetzen. Aber ich bin voller Hoffnung, dass diese grossen Ver-
wirklichungen nicht weit entfernt sind, und ich weiss dass, wenn
dieses erste Werk vollendet ist, sie mit mathematischer Gewissheit

folgen werden.

Wenn die grosse, zufaellig enthuelte und experimentell
bestaetigte Wahrheit voellig erkannt wird, dass dieser Planet, bei
all seiner erschreckenden Unermesslichkeit, fuer elektrische Strooe-
ne tatsaechlich nichts mehr ist als eine kleine Metallkugel und
dass ~~infolge~~ dieser Tatsache die Verwirklichung vieler Moeglichkei-
ten, von denen jede der Einbildungskraft spottet und von unberechen-
barer Bedeutung ist, absolut sicher macht; wenn die erste Anlage in
Betrieb gesetzt und bewiesen wird, dass eine telegraphische Bot-
schaft, fast so geheim und unstoerbar wie ein Gedanke, auf irgend
eine irdische Entfernung uebertragen werden, dass der Schall der
menschlichen Stimme, mit allen ihren Intonationen und Modulationen,
getreu und augenblicklich an irgend einer andern Stelle der Erde
wieder erzeugt werden, dass die Energie eines Wasserfalles zur
Lieferung von Licht, Waerme und Triebkraft, irgendwo - auf See, oder
Land oder hoch oben in der Luft - verwendbar gemacht werden kann,
dann wird die Menschheit sein wie ein Aneisenhaufe, den man mit
einem Stock aufgeruehrt hat: Sehet die Aufregung, die da kommt!

MY INVENTIONS

by Nikola Tesla.

VI. The Art of Telautomatics.

How Tesla's Mind Recuperates.

No subject to which I have ever devoted myself has called for such concentration of mind and strained to so dangerous a degree the finest fibers of my brain as the system of which the Magnifying Transmitter is the foundation. I put all the intensity and vigor of youth in the development of the rotating field discoveries, but those early labors were of a different character. Although strenuous in the extreme, they did not involve that keen and exhausting discernment which had to be exercised in attacking the many puzzling problems of the wireless. Despite my rare physical endurance at that period the abused nerves finally rebelled and I suffered a complete collapse, just as the consummation of the long and difficult task was almost in sight. Without doubt I would have paid a greater penalty later, and very likely my career would have been prematurely terminated, had not providence equipped me with a safety device, which has seemed to improve with advancing years and unfailingly comes into play when my forces are at an end. So long as it operates I am safe from danger, due to overwork, which threatens other inventors and, incidentally, I need no vacations

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which are inaccessible to most people. When I am all but used up I am like the natives, who "naturally fall asleep while white folks worry". To venture a theory out of my sphere - the body probably accumulates little by little a definite quantity of some toxic matter and I sink into a nearly lethargic state which lasts from an hour to the minute. Upon awakening I have the sensation as though the events immediately preceding had occurred very long ago, and if I attempt to continue the interrupted train of thought I feel a veritable mental nausea. Involuntarily I then turn to other work and am surprised at the freshness of the mind and ease with which I overcome obstacles that had baffled me before. After weeks or months my passion for the temporarily abandoned invention returns and I invariably find answers to all the vexing questions with scarcely any effort.

In this connection I will tell of an extraordinary experience which may be of interest to students of psychology. I had produced a striking phenomenon with my grounded transmitter and was endeavoring to ascertain its true significance in relation to the currents propagated through the earth. It seemed a hopeless undertaking and for more than a year I worked unremittingly but in vain. This profound study so entirely absorbed me that I became forgetful of everything else, even of my undermined health. At last, as I was at the point of breaking down, nature applied the preservative inducing lethal sleep. Regaining my senses, I realized with consternation that I was

unable to visualize scenes from my life except those of infancy, the very first ones that had entered my consciousness. Curiously enough, these appeared before my vision with startling distinctness and afforded me welcome relief. Night after night, when retiring, I would think of them and more and more of my previous existence was revealed. The image of my mother was always the principal figure in the spectacle that slowly unfolded, and a consuming desire to see her again gradually took possession of me. This feeling grew so strong that I resolved to drop all work and satisfy my longing. But I found it too hard to break away from the laboratory and several months elapsed during which I had succeeded in reviving all the impressions of my past life up to the spring of 1892. In the next picture that came out of the mist of oblivion, I saw myself at the Hotel de la Paix in Paris just coming to from one of my peculiar sleeping spells, which had been caused by prolonged exertion of the brain. Imagine the pain and distress I felt when it flashed upon my mind that a dispatch was handed to me at that very moment bearing the sad news that my mother was dying; I remembered how I made the long journey home without an hour of rest and how she passed away after weeks of agony! It was especially remarkable that during all this period of partially obliterated memory I was fully alive to everything touching on the subject of my research. I could recall the smallest details and the least insignificant observations in my experiments and even recite pages of text and complex mathematical formulae.

My belief is firm in a law of compensation. The true rewards are ever in proportion to the labor and sacrifices made. This is one of the reasons why I feel certain that of all my inventions, the Magnifying Transmitter will prove most important and valuable to future generations. I am prompted to this prediction not so much by thoughts of the commercial and industrial revolution which it will surely bring about, but of the humanitarian consequences of the many achievements it makes possible. Considerations of mere utility weigh little in the balance against the higher benefits of civilization. We are confronted with portentous problems which can not be solved just by providing for our material existence, however abundantly. On the contrary, progress in this direction is fraught with hazards and perils not less menacing than those born from want and suffering. If we were to release the energy of atoms or discover some other way of developing cheap and unlimited power at any point of the globe this accomplishment, instead of being a blessing, might bring disaster to mankind in giving rise to dissension and anarchy which would ultimately result in the enthronement of the hated regime of force. The greatest good will come from technical improvements tending to unification and harmony, and my wireless transmitter is preëminently such. By its means the human voice and likeness will be reproduced everywhere and factories

driven thousands of miles from waterfalls furnishing the power; aerial machines will be propelled around the earth without a stop and the sun's energy controlled to create lakes and rivers for motive power and transformation of arid deserts into fertile lands. The introduction for telegraphic, telephonic and similar uses will automatically cut out the statics and all other interferences which at present impose narrow limits to the application of the wireless. This is a timely topic on which a few words might not be amiss.

Tesla Raps "Static" Men Vigorously.

During the past decade a number of people have arrogantly claimed that they had succeeded in doing away with this impediment. I have carefully examined all of the arrangements described and tested most of them long before they were publicly disclosed, but the finding was uniformly negative. A recent official statement from the U. S. Navy may, perhaps, have taught some beguileable news editors how to appraise these announcements at their real worth. As a rule the attempts are based on theories so fallacious that whenever they come to my notice I can not help thinking in a lighter vein. Quite recently a new discovery was heralded, with a deafening flourish of trumpets, but it proved another case of a mountain bringing forth a mouse. This reminds me of an exciting incident which took place years ago when I was conducting my experiments with currents of high frequency. Steve Brodie had just jumped off the Brooklyn Bridge. The feat has been vulgarized since by imitators, but the

first report electrified New York. I was very impressionable then and frequently spoke of the daring printer. On a hot afternoon I felt the necessity of refreshing myself and stepped into one of the popular thirty thousand institutions of this great city where a delicious twelve per cent beverage was served which can now be had only by making a trip to the poor and devastated countries of Europe. The attendance was large and not over-distinguished and a matter was discussed which gave me an admirable opening for the careless remark: "This is what I said when I jumped off the bridge". No sooner had I uttered these words than I felt like the companion of Timotheus in the poem of Schiller. In an instant there was a pandemonium and a dozen voices cried: "It is Brodie!" I threw a quarter on the counter and bolted for the door but the crowd was at my heels with yells: "Stop, Steve!" which must have been misunderstood for many persons tried to hold me up as I ran frantically for my haven of refuge. By darting around corners I fortunately managed - through the medium of the fire-escape - to reach the laboratory, which I threw off my coat, camouflaged myself as a hard working blacksmith, and started the forge. But these precautions proved unnecessary: I had eluded my pursuers. For many years afterward, at night, when imagination turns into spectres the trifling troubles of the day, I often thought, as I tossed on the bed, what my fate would have been had that mob caught me and found out that I was not Steve Brodie!

Now the engineer, who lately gave an account before a technical body of a novel remedy against statics based on a "heretofore unknown law of nature", seems to have been as reckless as myself when he contended that these disturbances propagate up and down, while those of a transmitter proceed along the earth. It would mean that a condenser, as this globe, with its gaseous envelop, could be charged and discharged in a manner quite contrary to the fundamental teachings propounded in every elemental text-book of physics. Such a supposition would have been condemned as erroneous, even in Franklin's time, for the facts bearing on this were then well-known and the identity between atmospheric electricity and that developed by machines was fully established. Obviously, natural and artificial disturbances propagate through the earth and the air in exactly the same way, and both set up electro-motive forces in the horizontal, as well as vertical, sense. Interference can not be overcome by any such methods as were proposed. The truth is this: In the air the potential increases at the rate of about fifty volts per foot of elevation, owing to which there may be a difference of pressure amounting to twenty, or even forty thousand volts between the upper and lower ends of the antenna. The masses of the charged atmosphere are constantly in motion and give up electricity to the conductor, not continuously but rather disruptively, this producing a grinding noise in a sensitive telephonic

receiver. The bigger the terminal and the greater the space encompassed by the wires, the more pronounced is the effect, but it must be understood that it is purely local and has little to do with the real trouble. In 1900, while perfecting my wireless system, one form of apparatus comprised four antennae. These were carefully calibrated to the same frequency and connected in multiple with the object of magnifying the action, in receiving from any direction. When I desired to ascertain the origin of the transmitted impulses, each diagonally situated pair was put in series with a primary coil energizing the detector circuit. In the former case the sound was loud in the telephone; in the latter it ceased, as expected, the two antennae neutralizing each other, but the true statics manifested themselves in both instances and I had to devise special preventives embodying different principles.

The Remedy For Statics.

By employing receivers connected to two points of the ground, as suggested by me long ago, this trouble caused by the charged air, which is very serious in the structures as now built, is nullified and besides, the liability of all kinds of interference is reduced to about one-half, because of the directional character of the circuit. This was perfectly self-evident, but came as a revelation to some simple-minded wireless folks whose experience was confined to forms of apparatus that could have been improved with an axe, and they have been disposing of the bear's skin before

It would be easy to get rid of them by receiving without aerials. But, as a matter of fact, a wire buried in the ground which, conforming to this view, should be absolutely immune, is more susceptible to extraneous impulses than one placed vertically in the air. To state it fairly, a slight progress has been made, but not by virtue of any particular method or device. It was achieved simply by discarding the enormous structures, which are bad enough for transmission but wholly unsuitable for reception, and adopting a more appropriate type of receiver. As I pointed out in a previous article, to dispose of this difficulty for good, a radical change must be made in the system, and the sooner this is done the better.

Radio Government Control Not Wanted.

It would be calamitous, indeed, if at this time when the art is in its infancy and the vast majority, not excepting even experts, have no conception of its ultimate possibilities, a measure would be rushed through the legislature making it a Government monopoly. This was proposed a few weeks ago by Secretary Daniels, and no doubt that distinguished official has made his appeal to the Senate and House of Representatives with sincere conviction. But universal evidence unmistakably shows that the best results are always obtained in healthful commercial competition. There are, however, exceptional reasons why ^{wireless} A should be given the fullest freedom of

development. In the first place it offers prospects immeasurably greater than any other to betterment of human life than any other invention or discovery in the history of man. Then again, it must be understood that this wonderful art has been, in its entirety, evolved here and so called "American" with more right and propriety than the telephone, the incandescent lamp or the aeroplane. Enterprising press agents and stock jobbers have been so successful in spreading misinformation that even so excellent a periodical as the Scientific American accords the chief credit to a foreign country. The Germans, of course, gave us the Hertz-waves and the Russian, English, French and Italian experts were quick in using them for signalling purposes. It was an obvious application of the new agent and accomplished with the old classical and unimproved induction coil-scarcely anything more than another kind of heliography. The radius of transmission was very limited, the results attained of little value, and the Hertz oscillations, as a means for conveying intelligence, could have been advantageously replaced by sound-waves, which I advocated in 1891. Moreover, all these attempts were made three years after the basic principles of the wireless system, which is universally employed today, and its potent instrumentalities had been clearly described and developed in America. No trace of those Hertzian appliances and methods remains today. We have proceeded in the very opposite direction and what has been done is the product of the brains and efforts of citizens of this country. The fundamental patents have expired and the opportunities are open to all. The chief argument of the Secretary is based on interference. According to his statement reported in the New York Herald of July 29th, signals from a powerful station can be intercepted in every village of the world. In view of this fact, which was demonstrated in my experiments of 1900, it would be of little

America First.

use to impose restrictions in the United States. As throwing light on this point, I may mention that only recently an odd looking gentleman called on me with the object of enlisting my services in the construction of world transmitters in some distant land. "We have no money," he said, "but carloads of solid gold and we will give you a liberal amount." I told him that I wanted to see first what will be done with my inventions in America and this ended the interview. But I am satisfied that some dark forces are at work, and as time goes on the maintenance of continuous communication will be rendered more difficult. The only remedy is a system immune against interruption. It has been perfected, it exists, and all that is necessary is to put it in operation.

The terrible conflict is still uppermost in the minds and perhaps the greatest importance will be attached to the Magnifying Transmitter as a machine for attack and defense, more particularly in connection with telautomatics. This invention is a logical outcome of observations begun in my boyhood and continued throughout my life. When the first results were published, the Electrical Review stated editorially that it would become one of the "most potent factors in the advance and civilization of mankind". The time is not distant when this prediction will be fulfilled. In 1898 and 1900 it was offered to the Government and might have been adopted were I

and I have gone to Alexander's shepherd when they
were something like Alexander. At that time I really thought
that we could abolish war, because of its unlimited destruc-
tiveness and elimination of the personal element of combat.
But while I have not lost faith in its potentialities, my
views have changed since.

The Road To Permanent Peace.

War can not be avoided until the physical cause
for its recurrence is removed and this, in the last analysis,
is the vast extent of the planet on which we live. Only
through annihilation of distance in every respect as, the con-
veyance of intelligence, transport of passengers and supplies
and transmission of energy will conditions be brought about
some day, insuring permanency of friendly relations. What we
now want most is closer contact and better understanding be-
tween individuals and communities all over the earth, and
the elimination of that fanatic devotion to exalted ideals
of national egoism and pride which is always prone to plunge
the world into primeval barbarism and strife. No League or
parliamentary act of any kind will ever prevent such a cal-
amity. These are only new devices for putting the weak at
the mercy of the strong. I have expressed myself in this
regard fourteen years ago when a combination of few leading
governments - a sort of Holy Alliance - was advocated by
the late Andrew Carnegie, who may be fairly considered as

of this idea, having given to it more publicity and
prior to the efforts of the President. While it can
not be denied that such a pact might be of material advantage
to some less fortunate peoples, it can not attain the chief
object sought. Peace can only come as a natural consequence
of universal enlightenment and merging of races, and we are
still far from this blissful realization. As I view the
world of today, in the light of the gigantic struggle we have
witnessed, I am filled with conviction that the interests of
humanity would be best served if the United States remained
true to its traditions and kept out of "entangling alliances".
Situated as it is, geographically, remote from the theaters
of impending conflicts, without incentive to territorial
aggrandizement, with inexhaustible resources, and immense
population thoroughly imbued with the spirit of liberty and
right, this country is placed in a unique and privileged
position. It is thus able to exert, independently, its col-
ossal strength and moral force to the benefit of all, more
judiciously and effectively, than as member of a league.

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lower ~~of~~ organisms and his latest book "Forced Movements" is revolutionary. But while men of science accept this theory simply as any other that is recognized, to me it is a truth which I hourly demonstrate by every act and thought of mine. The consciousness of the external impression prompting me to any kind of exertion, physical or mental, is ever present in my mind.

Only on very rare occasions, when I was in a state of exceptional concentration, have I found difficulty in locating the original

Lack of impulses. ^{far} The by far greater ^{number} of human beings are never aware of Observation what is passing around and within them, and millions fall victims of a form of disease Ignorance. and die prematurely just on this account. The commonest, every-

day occurrences appear to them mysterious and inexplicable. One may feel a sudden wave of sadness and rake his brain for an explanation when he might have noticed that it was caused by a cloud cutting off the rays of the sun. He may see the image of a friend dear to him under conditions which he construes as very peculiar, when only shortly before he has passed him in the street or seen his photograph somewhere. When he loses a collar button he fusses and swears for an hour, being unable to visualize his previous actions and locate the object directly. Deficient observation is merely a form of ignorance and responsible for the many morbid notions and foolish ideas prevailing. There is not more than one out of every ten persons who does not believe in telepathy and other psychic manifestations, spiritualism and communion with the dead and who would refuse to listen to

will be unwilling defectors. Just to illustrate how deeply rooted this tendency has become even among the clear-headed Psychic Phenomena in the Manufacture of Flivvers. American population, I may mention a comical incident. ^{Not} Shortly before the war, when the exhibition of my turbines in this City elicited widespread comment in the technical papers, I anticipated that there would be a ^{scramble} ~~xxx~~ among manufacturers to get hold of the invention and I had particular designs on that man from Detroit who has an uncanny faculty for accumulating millions. So ^{confident} ~~xxx~~ was I that he would turn up some day, ~~xxxxxxx~~ that I declared this as certain to my secretary and assistants. Sure enough, one fine morning a body of engineers, ^{from} ~~representing~~ the Ford Motor Company presented themselves with the request of discussing with me an important project. "Didn't I tell you?" I remarked triumphantly to my employes, and one of them said, "You are wonderfully Mr. Tesla, everything comes out exactly as you predict." As soon as these ^{hard-headed} ~~distinguished~~ men were seated I, of course, immediately began to extol the wonderful features of my turbine when the spokesman interrupted me and said, "We know all about this but we are on a special errand. We ^{have} formed a psychological society for the investigation of psychic phenomena and we want you to join us in this undertaking." I suppose these engineers never knew how near they came to being fired out of my office.

COMPUTING SPIRITISM.

Ever since I was told by some of the greatest men of the time, leaders in science whose names are immortal, that I am possessed of an unusual mind, I bent all my thinking faculties on the solution of great problems regardless of sacrifice.

For many years I endeavored to solve the enigma of death and watched eagerly for every kind of spiritual indication. But only once in the course of my existence have I had an experience which, momentarily, impressed me as supernatural. It was at the time of my mother's death. I had become completely exhausted by pain and long vigilance and one night was carried to a building about two blocks from our home. As I lay helpless there, I thought that if my mother died while I was away from her bedside she would surely give me a sign. Two or three months before I was in London in company with my late friend, Sir William Crookes, when spiritualism was discussed and I was under the full sway of these thoughts. I might not have paid attention to other men but was susceptible to his arguments as it was his epochal work on radiant matter, which I had read as a student, that made me embrace the electrical career. I reflected that the conditions for a look into the beyond were most favorable, for my mother was a woman of genius and particularly excelling in the powers of intuition. During the whole night every fiber in my brain was strained in expectancy, but nothing happened ^{until} ~~and~~ early in the morning ^{when} I fell in a sleep or perhaps a swoon, and saw a cloud carrying angelic figures of marvelous beauty, one of whom gazed upon me lovingly and gradually assumed the features of my mother. The appearance slowly floated across the room and vanished and I was awakened by an indescribably sweet song of many voices. In that instant a certitude, which no words can express, came upon me that my mother had ^{just} died, and that was true. I ~~XXXXXXXXXXXX~~

was
unable to understand the tremendous weight of the painful knowledge
I received in advance and wrote a letter to Sir William Crookes
while ~~all~~ under the domination of these impressions and in poor
bodily health. When I recovered I sought for a long time the
external cause of this strange manifestation and, to my great re-
lief, I succeeded after many months of fruitless effort. I had
seen the painting of a celebrated artist, representing allegori-
cally one of the seasons in the form of a cloud with a group of
angels which seemed to actually float in the air, and this had
struck me forcefully. It was exactly the same that appeared in
my dream with the exception of my mother's likeness. The music
came from the choir in the church ^{nearby} at the early mass of Easter
morning, explaining everything satisfactorily in conformity with
scientific facts.

This occurred long ago and I have never had the
faintest reason since to change my views on psychical and spiritual
phenomena for which there is absolutely no foundation. The belief
in these is the natural outgrowth of intellectual development.
Religious dogmas are no longer accepted in their orthodox meaning
but every individual clings to some faith in a Supreme power of
some kind. We ^{all} must have ^{an} ideal to govern our conduct and insure
contentment but it is immaterial whether it be one of creed,
art, science or anything else, so long as it fulfills the function
of a dematerializing force. It is essential to the peaceful
existence of humanity as a whole that one common conception should
prevail.

Tesla's According Discovery.

While I have ~~failed~~ to obtain any evidence in support

of the contentions of psychologists and spiritualists, I have proved to my complete satisfaction the automatism of life, not only through continuous observations of individual actions, but even more conclusively, through certain generalizations. These amount to a discovery which I consider of the greatest moment to human society and on which I shall briefly dwell. I got the first inkling of this astounding truth when I was still a very young man, but for many years I interpreted what I noted simply as coincidences. Namely, whenever either myself or a person to whom I was attached, or a cause to which I was devoted, was hurt by others in a particular way, which might be best popularly characterized as the most unfair imaginable, I experienced a singular and undefinable pain which, for want of a better term, I have qualified as "cosmic", and shortly thereafter, and invariably, those who had inflicted it came to grief. After many such cases I confided this to ^{a number of friends,} ~~others~~ who had the opportunity to convince themselves of the truth of the theory which I ^{have} ~~am~~ gradually formulated and which may be stated in the following few words.

Our bodies are of similar construction and exposed to the same external influences. This results in likeness of response and concordance of the general activities on which all our social and other rules and laws are based. We are automata entirely controlled by the forces of the medium, being tossed about like corks on the surface of the water, but mistaking the resultant of the impulses from the outside for free will. The movements and other actions we perform are always life-preservative

and though seemingly quite independent from one another, we are connected by invisible links. So long as the organism is in order it responds accurately to the agents that prompt it, but the moment that there is some derangement in any individual, his self-preserved power is impaired. Everybody understands, of course, that if one becomes deaf, has his eyesight weakened, or his limbs injured, the chances for his continued existence are lessened. But this is also true, and perhaps moreso, of certain defects in the brain which deprive the automaton, more or less, of that vital quality and cause it to rush into destruction. A very sensitive and observant being, with his highly developed mechanism all intact, and acting with precision in obedience to the changing conditions of the environment, is endowed with a transcending mechanical sense, enabling him to evade perils too subtle to be directly perceived. When he comes in contact with others whose controlling organs are radically faulty, that sense asserts itself and he feels the 'cosmic' pain. The truth of this has been borne out in hundreds of instances and I am inviting other students of nature to devote attention to this subject, believing that through combined and systematic effort results of incalculable value to the world will be attained.

Dr. Tesla's First Telautomaton.

The idea of constructing an automaton, to bear out my theory, presented itself to me early but I did not begin active work until 1893, when I started my wireless investigations. During the succeeding two or three years a number of automatic mechanisms,

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to be actuated at distance, were constructed by me and exhibited to visitors in my laboratory. In 1896, however, I designed a complete machine capable of a multitude of operations, but the consummation of my labors was delayed until late in 1897. This machine was illustrated and described in my article in the Century Magazine of June, 1900, and other periodicals of that time and, when first shown in the beginning of 1898, it created a sensation such as no other invention of mine has ever produced. In November, 1898, a basic patent on the novel art was granted to me, but only after the Examiner-in-Chief had come to New York and witnessed the performance, for what I claimed seemed unbelievable. I remember that when later I called on an official in Washington, with a view of offering the invention to the Government, he burst out in laughter upon my telling him what I had accomplished. Nobody thought then that there was the faintest prospect of perfecting such a device. It is unfortunate that in this patent, following the advice of my attorneys, I indicated the control as being effected through the medium of a single circuit and a well-known form of detector, for the reason that I had not yet secured protection on my methods and apparatus for individualization. As a matter of fact, my boats were controlled through the joint action of several circuits and interference of every kind was excluded. Most generally I employed receiving circuits in the form of loops, including condensers, because the discharges of my high tension transmitter ionized the air in the hall so that even a very small aerial would draw electricity from the surrounding atmosphere for hours. Just to give an idea, I found, for instance, that a bulb 12" in diameter, highly

... with one single terminal to which a short wire was attached, would deliver well on to one thousand successive ... before all charge of the air in the laboratory was neutralized. The loop form of receiver was not sensitive to such disturbance and it is curious to note that it is becoming popular at this late date. In reality it collects much less energy than the serials or a long grounded wire, but it so happens that it does away with a number of defects inherent to the present wireless devices. In demonstrating my invention before audiences, the visitors were requested to ask any questions, however involved, and the automaton would answer them by signs. This was considered magic at that time but was extremely simple, for it was myself who gave the replies by means of the device.

At the same period another larger telautomatic boat was constructed, a photograph of which is shown in this number of the Electrical Experimenter. It was controlled by loops having several turns placed in the hull, which was made entirely water-tight and capable of submergence. The apparatus was similar to that used in the first with the exception of certain special features I introduced as, for example, incandescent lamps which afforded a visible evidence of the proper functioning of the machine and served for other purposes.

TELAUTOMATICS of the FUTURE.

These automata, controlled within the range of vision of the operator, were, however, the first and rather crude steps in the evolution of the Art of Telautomatics as I had conceived it. The next logical improvement was its application to automatic mechanisms beyond the limits of vision and at great distance from the

center of control, and I have ever since advocated their employment as instruments of warfare in preference to guns. The importance of this now seems to be recognized, if I am to judge from casual announcements through the press of achievements which are said to be extraordinary but contain no merit of novelty whatever. In an imperfect manner it is practicable, with the existing wireless plants, to launch an aeroplane, have it follow a certain approximate course, and perform some operation at a distance of many hundreds of miles. A machine of this kind can also be mechanically controlled in several ways and I have no doubt that it may prove of some usefulness in war. But there are, to my best knowledge, no instrumentalities in existence today with which such an object could be accomplished in a precise manner. I have devoted years of study to this matter and have evolved means, making such and greater wonders easily realizable. As stated on a previous occasion, when I was a student at college I conceived a flying machine quite unlike the present ones. The underlying principle was sound but could not be carried into practice for want of a prime-mover of sufficiently great activity. In recent years I have successfully solved this problem and am now planning aerial machines devoid of sustaining planes, ailerons, propellers and other external attachments, which will be capable of immense speeds and are very likely to furnish powerful arguments for peace in the near future. Such a machine, sustained and propelled entirely by reaction, is shown on one of the pages and is supposed to be controlled either

mechanically or by wireless energy. By installing proper plants it will be practicable to project a missile of this kind into the air and drop it almost on the very spot designated which may be thousands of miles away. But we are not going to stop at this. Telautomata will be ultimately produced, capable of acting as if possessed of their own intelligence and their advent will create a revolution. As early as 1898 I proposed to representatives of a large manufacturing concern the construction and public exhibition of an automobile carriage which, left to itself, would perform a great variety of operations involving something akin to judgment. But my proposal was deemed chimerical at that time and nothing came from it.

At present many of the ablest minds are trying to devise expedients for preventing a repetition of the awful conflict which is only theoretically ended and the duration and main issues of which I have ^{correctly} predicted in an article printed in the Sun of December 20, 1914. The proposed League is not a remedy but, on the contrary, in the opinion of a number of competent men, may bring about results just the opposite. It is particularly regrettable that a punitive policy was adopted in framing the terms of peace, ^{because} ~~xxx~~ a few years hence it will be possible for nations to fight without armies, ships or guns, by weapons far more terrible, to the destructive action and range of which there is virtually no limit. Any city, at a distance whatsoever, from the enemy, can be destroyed by him and no power on earth can stop him from doing so. If we want to avert an

impending calamity and a state of things which may transform this globe into an inferno, we should push the development of flying machines and wireless transmission of energy without an instant's delay and with all the power and resources of the nation.

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of the

TESLA MACHINE COMPANY.

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ARTICLE I.

MEETING OF STOCKHOLDERS.

Sec. 1: The annual meeting of the stockholders of this Company shall be held at the office of the Corporation on the third Thursday in January of each and every year at 4 P.M. for the election of directors and such other business as may properly come before the meeting. Notice of the time, place and object of such meeting shall be given by publication thereof at least once in each week for two successive weeks immediately preceeding such meeting in the manner required by the Stock Corporation Law and by mailing at least six days previous to such meeting, postage prepaid, a copy of such notice, addressed to each stockholder at his P.O. address as same shall appear on the books of the Company. No business other than that stated in such notice shall be transacted at such meeting without the unanimous consent of all stockholders present thereat in person or by proxy.

Sec. 2: Special meetings of the stockholders other than those regulated by statute may be called at any time by a major-

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Sec. 2: Special meetings of the stockholders other than those regulated by statute may be called at any time by a major-

ity of directors. It shall also be the duty of the President to call a meeting of the stockholders so to do by one director or other officer of the Company, and whenever requested in writing so to do by at least a majority of the capital stock. Notice of every meeting of the stockholders, stating the time, place and object thereof, shall be given by mailing, postage prepaid, at least six days before the meeting, a copy of such notice addressed to each stockholder at his post office address as the same appears on the books of the Company.

Sec. 3: At all meetings of stockholders, there shall be present either in person or by proxy stockholders owning at least three-fifths of the capital stock of the Corporation in order to constitute a quorum except at special elections of directors pursuant to the General Corporation Law.

Sec. 4: At all annual meetings of stockholders the right of any stockholder to vote shall be governed and determined as prescribed in the General Corporation Law.

Sec. 5: If for any reason the annual meeting of the stockholders shall not be held as hereinbefore provided, such annual meeting shall be called and conducted as prescribed in the General Corporation Law.

Sec. 6: At all meetings of the stockholders only such persons shall be entitled to vote in person and by proxy who appear as stockholders on the transfer books of the Company for ten days immediately preceeding such meeting.

Sec. 7: At the annual meeting of stockholders the follow-

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ing shall be the order of business, viz:

1. Roll.
2. Proof of proper notice of meeting.
3. Report of President.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of Committees.
7. Election of Directors and inspectors of election.
8. Miscellaneous business.

Sec. 8: At all meetings of stockholders all questions, except the question of an amendment to the By-Laws and the election of Directors and inspectors of election, and all such other questions, the manner of deciding which is specially regulated by statute, shall be determined by a majority vote of the stockholders present in person or by proxy; provided, however, that any qualified voter may demand a stock vote and in that case, such stock vote shall be taken immediately, and each stockholder present in person or by proxy shall be entitled to one vote for each share of stock owned by him. All voting shall be 'viva voce', except that a stock vote shall be by ballot, each of which shall state the name of the stockholder voting and the number of shares owned by him, and in addition, if such ballot be cast by a proxy, it shall also state the name of such proxy.

Sec. 9: At special meetings of stockholders the provisions of the General Corporation Law shall apply to the casting of all votes.

ARTICLE II.

DIRECTORS.

Sec. 1: The Directors of this Corporation shall be elected by ballot for the term of one year at the annual meeting of the stockholders, except as hereinafter otherwise provided for

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... shall be chosen by a plurality of the stockholders voting either in person or by proxy.

... in the Board of Directors occurring during the year, shall be filled for the unexpired term by a majority vote of the remaining directors at any special meeting called for that purpose or at any regular meeting of the Board.

Sec. 3: If the entire Board of directors shall die or resign, the President may call a meeting in the same manner that the president may call such meeting, and Directors of the unexpired term may be elected at such special meeting in the manner provided for their election at annual meetings.

Sec. 4: The Board of Directors may adopt such rules for the regulation of their meetings and management of the affairs of the Corporation as they may deem proper, not inconsistent with the Laws of the State of New York or their by-laws.

Sec. 5: The Board of Directors shall meet at such regular times as they may fix and whenever called together by the President upon due notice given to each Director. On the written request of any Director, the Secretary shall call a special meeting of the Board.

Sec. 6: All Committees shall be appointed by the Board of Directors.

ARTICLE III.

OFFICERS.

Sec. 1: The Board of Directors immediately after the annual meeting shall choose one of their number by a majority vote

to be president and in the same manner they shall also elect Vice President, a Treasurer, and a Secretary, and may also appoint such other officers as they may deem necessary. The elected Officers shall serve for one year or until the next annual election. The appointed Officers shall serve during the pleasure of the Board. The Board of Directors shall fix the salaries, if any, that shall be paid to the several Officers of the Company.

Sec. 2: The President shall preside at all meetings of the Board of Directors and shall act as temporary chairman at and call to order all meetings of the stockholders. He shall sign certificates of stock, sign and execute all contracts in the name of the Company when authorized to do so by the Board of Directors, appoint and discharge agents and employees subject to the approval of the Board of Directors, and he shall have the general management of the affairs of the Corporation and perform all the duties incidental to his office. At the annual meeting he shall present a written report to the stockholders, setting forth in full the condition of the Company. He shall countersign all notes or other evidences of indebtedness authorized by the Board of Directors.

Sec. 3: The Vice President shall in the absence or incapacity of the President perform the duties of that office.

Sec. 4: The Treasurer shall have the care and custody of all the funds and securities of the Corporation and deposit the same in the name of the Corporation in such banks as the Directors may elect. He shall sign certificates of stock and all checks, drafts, notes, and orders for the payment of money,

shall pay out the funds of the Company as authorized by the President or Board of Directors. He shall keep and have care of the books of the Company, and at all reasonable times exhibit his books and accounts to any director or stockholder of the Company upon application at the office of the Company during business hours. He shall affix the seal of the Company to all certificates of stock and all other instruments requiring same when so directed by the Board of Directors.

Sec. 5: The Secretary shall keep the minutes of the Board of Directors and also the minutes of the meeting of the stockholders; he shall attend to the giving and serving of all notices of the Company; he shall have charge of such books and papers as the Board may direct; he shall attend to such correspondence as may be assigned to him; and perform all the duties incident to his office.

ARTICLE IV.

CAPITAL STOCK.

Sec. 1: Subscriptions to the capital stock must be paid to the Treasurer at such time or times and in such installments as the Board of Directors may by resolution require. Any failure to pay an installment when required to be paid by the Board of Directors shall work a forfeiture of such shares of stock in arrears, pursuant to the Stock Corporation Law.

Sec. 2: Certificates of stock shall be numbered and registered in the order in which they are issued and shall be signed by the President or Vice President and by the Treasurer or Secretary, and the seal of the Corporation shall be affixed

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shall be bound to look up and in
consecutive order therefrom in the margin
of all be entered the name of the person signing the
share therein represented, the number of shares and the date
thereof. All certificates exchanged or returned to the Corpora-
tion shall be marked and noted with the date of cancellation
by the Treasurer and shall be faithfully noted in the certi-
ficate book opposite the memorandum of its issue.

Sec. 3: Transfers of stock shall only be made on the books
of the Company by the holder in person or by power of attorney
fully executed and acknowledged and filed with the Treasurer of
the Corporation and on surrender of the certificate or certi-
ficates of such shares.

Sec. 4: Whenever the capital stock of the Company is
increased, each bona fide owner of its stock shall be entitled
to purchase, at the par value thereof, an amount of stock in
proportion to the number of shares of stock he owns in the cor-
poration at the time of such increase.

ARTICLE V.

DIVIDENDS.

Sec. 1: Dividends shall be declared and paid out of the
surplus profits of the Corporation as often and at such times
as the Board of Directors may determine.

ARTICLE VI.

INSPECTORS.

Sec. 1: Two inspectors of election shall be elected at
each annual meeting of the stockholders to serve for one year.

and if the inspector shall refuse to serve or shall not be present, the meeting may appoint an inspector in his place.

ARTICLE VII.

SEAL.

Sec. 1: The Seal of the Corporation shall be in the form of a circle and shall bear the name of the Corporation and the year of its incorporation.

ARTICLE VIII.

AMENDMENTS.

Sec. 1: These by-laws may be amended at any stockholders meeting by a vote of the stockholders owning a majority of the stock, represented either in person or by proxy, provided the proposed amendment is inserted in the notice of such meeting: they may also be amended at any meeting of the Board of Directors by a three-fifths vote of the Directors.

TESLA'S NEW SYSTEM OF FLUID PROPULSION

In subduing the forces of Nature to his service man must invariably avail himself of some process in which a fluid acts as carrier of energy, this being an essential step in any industrial undertaking dependent on mechanical power. Evidently then, a discovery or radical departure in that domain must be of extreme importance and far-reaching influence on the existing conditions and phases of modern life.

Fluid propulsion is now effected by means of pistons, vanes or blades, which entail complexity of construction and impose many limi-

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tations on the propelling as well as propelled mechanism and its performance. Tesla has dis-
posed with these devices and produced machines of extraordinary simplicity which, moreover, are in many other respects superior to the old types universally employed. A few words will be sufficient to convey a clear idea of his invention.

Every fluid, as water or air, possesses two salient properties: adhesion and viscosity. Owing to the first it is attracted and clings to a metallic surface; by virtue of the second it resists the separation of its own particles. As an inevitable consequence a cer-

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tain amount of fluid is dragged along by a body propelled through it; conversely, if a body be placed in a fluid in motion it is impelled in the direction of movement. The practical forms of Tesla's apparatus consist of flat, circular disks, with central openings, mounted on a shaft and enclosed in a casing provided with ports at the peripheral and central portions. When deriving energy from any kind of fluid it is admitted at the periphery and escapes at the centre; when, on the contrary, the fluid is to be energized, it enters in the centre and is expelled at the periphery. In either case it traverses the in-

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orutices between the disks in a spiral path,
being derived from, or imparted to it,
by purely molecular action. In this novel man-
ner the heat energy of steam or explosive mix-
tures can be transformed with high economy in-
to mechanical effort; motion transmitted from
one shaft to another without solid connection;
vessels may be propelled with great speed; wat-
er raised or air compressed; an almost perfect
vacuum can be attained, substances frozen and
gases liquefied.

While this improvement has the
breadth and applicability of a fundamental
mechanical concept, the widest field for its

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commercial exploitation is, obviously, the thermo-
dynamic conversion of energy.

The commercial value of a prime-
mover is determined by its efficiency, specific
performance relative to weight and space occupied,
cheapness of manufacture, safety and reliability
of operation, adaptability to construction in
large units, capability of running at high periph-
eral velocity, reversibility, and a number of other
features of lesser importance. In the majority of
these a machine, operating on the new principle,
excels. But there is one quality which is most
desirable in a thermo-dynamic transformer from the

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economic point of view, and that is great resistance to deterioration and impairment of efficiency by heat.

The employment of high temperature is of such vital bearing on the efficiency of prime-movers that it is of paramount importance to extend the thermal range as far as practicable. In the present state of the art radical progress towards more economical transformation of the energy of fuel can only be achieved in that direction. Such being the case, the capability of the machine to withstand deteriorating effects of great heat is the controlling factor in determining its commercial value. In that most desired quality the

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Tesla turbine surpasses all the older types of heat motors. The Diesel and other internal combustion engines are fatally limited in this respect by their complete dependence on closely fitting sliding joints and unfailing supply of clean lubricant; while in the present forms of turbines buckets, blades and inherent mechanical deficiencies impose similar restrictions. These parts are too delicate and perishable to serve as elements of a gas turbine and this has been the main obstacle in the way of its successful realization. The rotor of the Tesla turbine presents a relatively enormous

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active area and the wear is quite insignificant as the fluid, instead of striking against the propelling organs in the usual destructive manner, flows parallel with the same, imparting its momentum by adhesion and viscosity instead of impact. Moreover, it has been shown that the efficiency of this form of rotor is not impaired to any appreciable degree by a roughening of the disks and that it operates satisfactorily even if the working medium is corrosive to an extent.

The universal adoption of steam as motive power under certain standard conditions, settled upon in the course of time, gradually forced upon the minds of engineers the Rankine

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Cycle Efficiency as criterion of performance and long continued endeavors to improve the same have finally resulted in complex multistage constructions entirely unsuitable for high temperatures. The Tesla turbine, by virtue of its exceptional heat-resisting and other unique properties, makes possible the attainment of great fuel economy with but a single stage, incidentally offering the additional advantages of an extremely simple, small, compact, and reliable mechanism. But perhaps the chief commercial value of this new prime-mover will be found in the fact that it can be operated with the cheapest grade of crude oil, colloidal fuel, or powdered coal, containing con-

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considerable quantities of grit, sulphur and other impurities, thus enabling vast sums of money to be saved annually in the production of power from fuel.

The Tesla turbine also lends itself to use in conjunction with other types, especially with the Parsons with which it forms an ideal combination. Although its practical introduction has been delayed by the force of circumstances, a number of years have been spent in exhaustive investigations and experiments on the basis of which the performance in any given case can be closely calculated. The first public tests were made before the

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outbreak of the war at the Waterside Station of the New York Edison Company where several machines, ranging from 100 to 5000 h.p., were installed and operated with satisfactory results. That the invention was appreciated by the technical profession may be seen from the excerpts of statements by experts and periodicals printed on the annexed page.

The salient advantages of the Tesla turbine may be summed up as follows:

EFFICIENCY: The most economical of the present prime-movers is the Diesel engine.

But, quite apart of many practical and com-

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mercial drawbacks, inseparable from this type,
it is entirely dependent on comparatively ex-
pensive oil, so that the Tesla Gas Turbine,
working with much cheaper fuel, would have
the better in competition even if its effi-
ciency as a thermodynamic transformer were
appreciably lower, all the more so in view
of its greater mechanical perfection.

Referring to turbines, all of
which are surpassed by the Parsons in econ-
omy as well as extent of use, definite lim-
its have already been reached and the only
possibilities of saving fuel exist in the
employment of steam at very high superheat

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and utilization of gas or oil as motive fuel. But none of the primemovers mentioned is adapted for such operation and although every effort has been made in this direction, no signal success has been achieved. The superheat is at most 250° F. this being considered the maximum permissible. All attempts to considerably extend the thermal range have failed chiefly because of the inability of bucket structures to withstand the action of intense heat. The Tesla Turbine can operate quite satisfactorily with the motive agent at very high temperature and, owing to this quality,

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lenis itself exceedingly well to these purposes.

SPECIFIC PERFORMANCE: In this particular it is superior to all other forms. Each disk is virtually the equivalent of a whole bucket wheel, and as many of them take up but a small width the output of the machine, considering its weight and size, is surprisingly great. This, while not being a measure of efficiency, is nevertheless a feature of considerable importance in many instances.

CHEAPNESS OF MANUFACTURE: The new turbine can be produced without a single machined part except the shaft, all the disks being punched

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and the casings pressed. By this method, with proper machinery installed on a large scale, the cost of production may be reduced to a figure never deemed possible in the construction of an engine. What is more, this can be done without material sacrifice of efficiency as small clearances are not essentially required.

SAFETY AND RELIABILITY OF OPERATION: There is an ever present danger in the running of high speed machines. A bucket turbine may at any moment run away and wreck the plant. Such accidents have happened again and again and this

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peril has often proved a deterrent to investment.

A remarkable quality of this turbine is its complete safety. As regards the wear and tear of the propelling organs it is significant and, in any event, of no consequence on the performance.

ADAPTABILITY TO CONSTRUCTION IN LARGE UNITS: In

all the present machines there is a distinct limit to capacity, for although large units can be manufactured, they are very costly and difficult to manage. The new turbine is so simple and the output so large that the limits in this direction can be greatly extended.

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RESISTANCE TO DETRIORATION BY HEAT AND OTHER

AGENTS: In this feature again it has an over-

whelming advantage over the old types in which

the maintenance of smooth surfaces and sharp

edges is indispensable to efficient working.

In the Tesla Turbine, for the reasons already

stated, the destructive actions of heat and

corrosive agents are much less pronounced and

of relatively negligible effect. This fact

has a most important bearing on the saving of

fuel.

CAPABILITY OF RUNNING AT HIGH PERIPHERAL SPEED:

In this respect also it is superior to others.

The rotating structure carries no load and is

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excellently adapted to withstand tensile stresses. Judging from the most recent turbine practice this quality should be of special value.

REVERSIBILITY: The present turbines are greatly handicapped by their incapability of reversal which is a very serious defect in certain applications, as the propulsion of vessels, necessitating the employment of auxiliary turbines which detracts from the propulsive power and adds materially to the cost of production and maintenance of the equipment. The Tesla Turbine has the unique

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n.p., n.d.
t.ms., 20 p.

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property of being reversible; not only this but it operates with the same efficiency in either direction. For marine purposes it therefore constitutes an ideal motor whether used alone or in conjunction with older types.

Besides the above it possesses other desirable features, constructive and operative, which will add to its value and adaptability to many industrial and commercial uses as, railroading, marine navigation, aerial propulsion, generation of electricity, refrigeration, operation of trucks and automobiles, hydraulic power, agriculture, irrigation, mining and similar purposes.

-19-

COLUMBIA UNIVERSITY LIBRARIES
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Spec. Ms. Coll. Tesla

Tesla, Nikola
Tesla's New System of Fluid Propulsion
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EXPRESSIONS OF OPINION ON THE TESLA TURBINE

- C. B. Richards, Professor Emeritus of Mechanics, Yale University:
"I am amazed at the development of power given by the turbine and stunned by the exhibit."
- F. Sargent, Chief Engineer and Turbine Expert: "I am impressed with the newness and novelty of the underlying principle of this invention. It is such as will claim the attention and admiration of anyone of a scientific turn of mind in a mechanical direction."
- Reynold Janney, Chief Engineer, Universal Transmission Co: "It is a great invention."
- Brigadier Allen of the War Department: "Something new in the world. Officers are greatly impressed with it."
- Miller Messer Hutchinson, Chief Engineer: "It is the greatest invention of the age."
- Arnold Trinyi, Chief Engineer, Celfourungs-Gesellschaft, Germany:
"The ideal of the turbine engine."
- B. R. T. Collins (Power Plant Economist): "It is a wonderful turbine."
- The Motor World: "The new principle unquestionably is a great contribution to science and engineering, great in its simplicity and breadth of application."
- Scientific American: "Considered from the mechanical standpoint, the turbine is astonishingly simple and economical in construction, should prove to possess such a durability and freedom from wear and breakdown as to place it, in these respects, far in advance of any type of steam or gas motor of the present day."
- Engineering Magazine: "An entirely new form of prime mover with interesting possibilities."
- Technical World Magazine: "The Tesla Turbine is the apotheosis of simplicity. It is so violently opposed to all precedent that it seems unbelievable."

From Humorous Articles and Comments:

"The turbine is different in principle to any heretofore in use and one which will take less room and less coal than the best engine now running".....
"Turbine of revolutionary design".... "Improvement in dynamics which promises revolutionary results"..
"Results seem revolutionary to the point of staggering the imagination".... "This motor will revolutionize the turbine industry".... "Wonderful motor. Extraordinary mechanical principle".... etc. etc.

COLUMBIA UNIVERSITY LIBRARIES
Special Collections
Spec Ms Coll Tesla

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Tesla, Nikola
Tesla's New System of Fluid Propulsion
n.p., n.d.
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CORPORATION BUREAU

STATE OF NEW YORK

Office of the Secretary of State

Albany, August 9, 1916

Geo. Schereff, Esq.,

Secy., Nikola Tesla Co.,
8 West 40th St., N. Y. City.

Dear Sir:

Enclosed herewith please find check for
\$ 1.25, the amount of overpayment of fees in
relation to the certificate of incorporation
of Tesla Company, Inc.

Yours respectfully,

A handwritten signature in cursive script, reading "Francis B. Sargent".

Secretary of State

J. Georg Scherff,

Drechsler und Eggenmacher.

Flodsbekad A. 1902

Junco galula *Junco*

[illegible]

J. Georg Scherff,
Turner (lathe) and Harrowmaker

North Sea Spa (Resort)
Ulenbruch
17 Sept 1902

Dearly loved children,

We received your dear letter, but it was all torn open on two sides and reglued here at the post office. It had arrived here with the address damaged. No doubt the mail carriers assumed there was a thousand mark bill in it because it was so thick. We read your letter as well as the newspaper clipping with interest and were amazed at your great enterprise. May it only come about that Mr. Tesla be successful in achieving his acceptance (joining). Then it certainly will not be to your disadvantage. We are happy, dear children, that you feel content there in spite of your isolation, and that you are all healthy. We'd like to see all of you some time, but no doubt that will just remain a wish.

Columbia University in the City of New York | New York, N.Y. 10027

Butler Library

801 Butler Library
April 17, 1979

Mr. [redacted] Anderson
2515 South Meade Street
Denver, Co. 80219

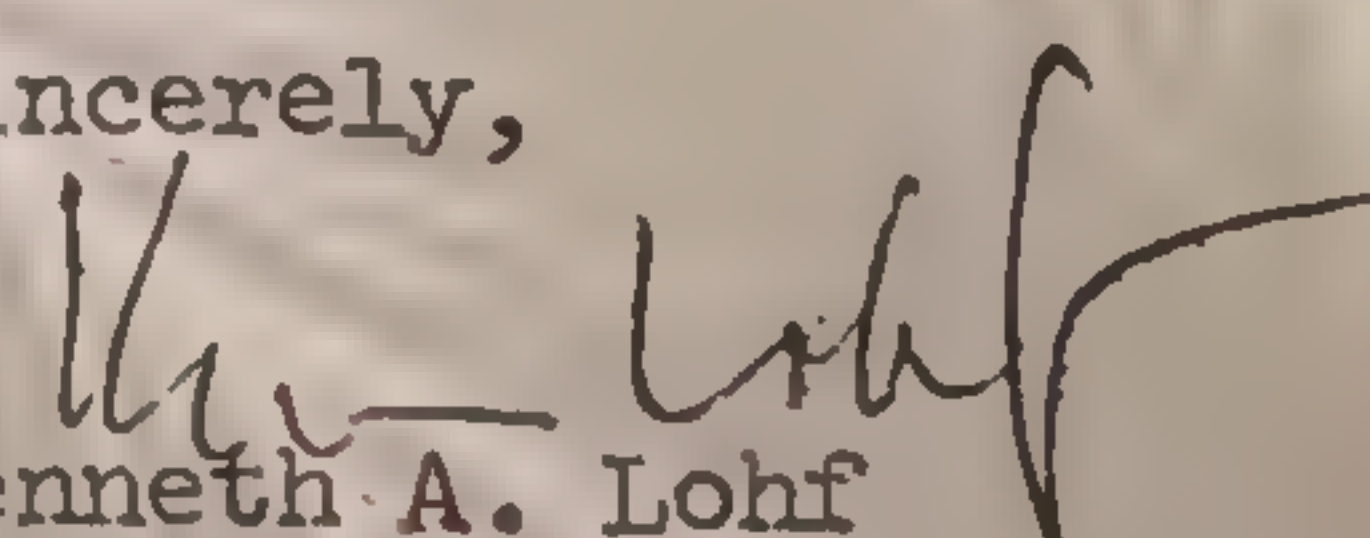
Dear Mr. Anderson:

In reply to your letter of 11 April, we have corrected our catalog cards for the Kiebitz item and checked the photocopies of your other enclosures against our collection. We have found that we don't have enclosures 2 and 4.

We do have enclosures 3 and 5 with one exception: the motor diagram supposed to have been attached to the 29 March 1918 letter to the Wisconsin Electric Company is not present. We have no idea where the lacking items you inquired about are and have no record as to ever receiving them.

All best wishes for the success of your work.

Sincerely,


Kenneth A. Lohf
Librarian for Rare Books
and Manuscripts

6/13/78

Not cataloged in
Columbia University
Special Collections

- 1) H. H. SECRETARY OF STATE AUG. 9, 1916
- 2) J. GEORG SCHERFF 17 SEPT. 1902

April 11, 1979

Mr. Kenneth L. Scherff
Librarian for Books and Mss.
801 5th Avenue
Columbia University in the City of New York
New York, NY 10027

Dear Kenneth:

Nikola Tesla Collection (Scherff Group)

With this letter I hope to provide some information to you and receive information from you that will, taken together, clear up some possible identification problems in the subject collection. As you are probably aware, I am serving as an adviser for a major biographical work on Tesla which is now in progress. It is desirable to cite the source for information that is used or quoted, and hopefully some uncertainties with regard to a few items in the Tesla-Scherff papers can be cleared up.

The following comments and questions are based on the contents of your catalog as of June 1976:

Enclosure 1 relates to the following catalog entry:

Tesla, Nikola
Kiebitz, Franz
For Accompaniment
Berlin-Steiglitz, 4 Mar. 1932
t.ms., 4 p. (Forward (?) to S. Boksan's
book on Nikola Tesla; p. 4 entitled:
Preface). (*Note: an English translation.*)

The enclosure includes a copy of the material covered by the catalog entry plus a copy of the front matter of the book in which the material appeared. Inasmuch as Boksan wrote several books about Tesla, it was my thought that you may want to more precisely identify the book in question.

The remaining four enclosures pertain to materials that I am not certain are in the Tesla-Scherff papers at the Library. They should be, inasmuch as I obtained the enclosure copies while the papers were in the hands of Marianna Garner -- the provenance antecedent.

Enclosure 2 is a copy of the first page (I don't have the remainder) of a letter to George Scherff from some family member in Germany. Note that Tesla is mentioned. Little is known about George Scherff, and this letter is important from the standpoint of helping to provide such information. Also, the substance of the letter could be important insofar as information concerning Tesla's business affairs. Is this in the Library's collection? (If so, I would like to have a complete copy.)

Enclosure 3 is a copy of a letter to George Scherff from Fritz Lowenstein. Note that Tesla is mentioned. This letter is important because of the fact that Lowenstein was Tesla's assistant at Colorado Springs in 1899 where Tesla performed experiments that startled the scientific world, and also worked for Tesla again at his laboratory in Shoreham when he (Lowenstein) returned from Germany. Lowenstein is a controversial figure in Tesla's biography because he (Lowenstein) had agreed to testify in support of the Tesla radio patents in an important case during WWI, but at the last minute switched to support the Marconi radio patents -- raising many unanswered questions about his integrity and provoking the wrath of Tesla's scorn. Is this item in the Library's collection?

Enclosure 4 is a copy of a note to George Scherff from the Office of the Secretary of State of New York. The Library's catalog describes several several stock certificates, incorporation statements, etc., each cited individually, but this item is not included. Is the item, in fact, in the Library's collection?

Enclosure 5 described a correspondence group (11 items) between George Scherff and the Wisconsin Electric Company. The story behind this group is that Tesla used Scherff to write as himself (to conceal his direct involvement) in order to obtain a special motor of his design. This situation becomes apparent as one reads the correspondence and various marginal notes -- the motor diagram (attached to March 29, 1918, letter) is in Tesla's hand. Is this correspondence group in the Library's collection?

If some (or none) of the items described by Enclosures 2 through 5 are in the Library's collection, do you know where they may be? Were they turned back to Mary Benjamin as nonrelevant, for example?

I will be most pleased to receive your comments.

Sincerely,



Leland Anderson
2525 South Meade Street
Denver, CO 80219

It may interest Braco to know that there are some plans and negotiations under way to make a film on Tesla. I understand Hollywood is negotiating with the heirs of John O'Neill for the rights on his book. Seems it will be Todd's outfit -- the guy that is dickering to make "War or Peace" according to the papers. Some months ago I spoke on the phone to a young lady in NY who some years ago I remember a letter asking about rights to make a film of Tesla. If I remembers I forwarded the letter to him in Belgrade.

D A G O R U B I N

OTAKU I BUDIMPESTI — POTESKOĆE U STRASSBURGU —
ROD EDISONA — NOĆ KUŠNJE I SLAVE — SJENE U LOVO-
RIKAMA — U RODITELJSKOM DOMU — VECERA U HOTELU
ASTORIJA — NA VISORAVNI COLORADA — U KULI NA LONG
ISLANDU — POSJET FRAKOVA — POZDRAV DOMOVINI

FRITZ LÖWENSTEIN

INGENIEUR.

FRANKFURT A. M. DEN 13. JUNI 1902.

Kronprinzenstrasse 38.

Sehr geehrter Herr Scherff !

Heute zurückgekehrt von der Jagd nach Herrn Director Singer beile ich mich Ihnen mitzutheilen, dass ich von demselben die Zustimmung zur vorzeitigen Lösung meines Contractes erhielt. Wir sind nun fest darüber, einen Nachfolger für meinen Posten zu bekommen und hoffe ich, dass derselbe im Laufe der nächsten Woche wird eintreffen können. Die Geschäftsübergabe werde ich dann sehr beschleunigen, kann jedoch den Zeitpunkt meiner Abreise heute noch nicht fixieren. Jedesfalls aber bin ich vor Ende Februar bei Ihnen, worauf ich mich schon sehr freue.

Die Sendung von 250 Dollar, die ich hie mit bestätige und für welche ich Herrn Tesla meinen besten Dank sagen lasse, dürfte bereits mehrere Tage hier am Postamt meiner geharrt haben.

Ich bitte Sie Herrn Tesla meine höflichste Empfehlung bestellen zu wollen.

Mit vielen Grüßen und dem Zuruf "Auf ein recht arbeitsfreudiges Wiedersehen "

Ihr

Fritz Löwenstein

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR

CHESTER H. BEACH
V. PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS

WISCONSIN ELECTRIC COMPANY

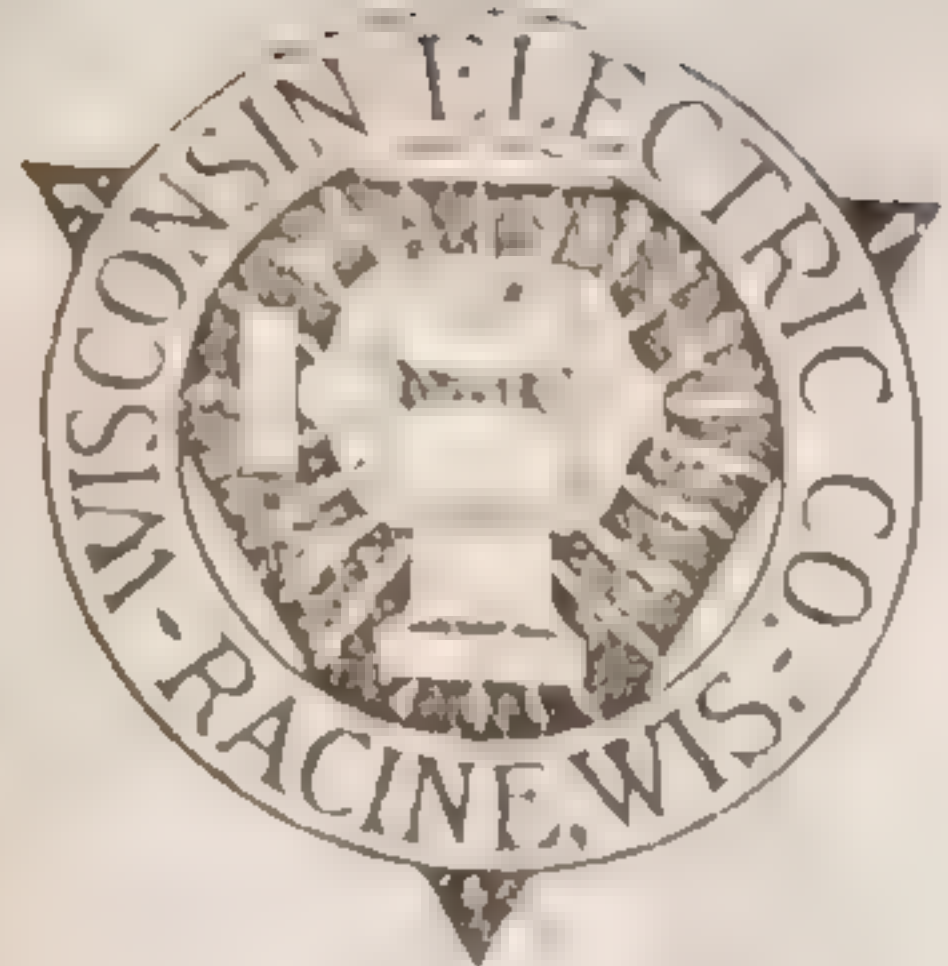
INCORPORATED

ELECTRICAL **DUMORE** SPECIALTIES

CABLE ADDRESS
"DUMORE RACINE"

RACINE, WISCONSIN

July 30th, 1918.



Mr. George Scherff,
17 Battery Place,
New York City, N.Y.

Dear Sir:-

We forwarded to you yesterday your Motor wound as you requested. It went forward C.O.D. for the reason that we have no means of knowing who you are and what credit you are entitled to. We hope that our action will meet with your approval, and that you can establish with us sufficient evidence for credit.

We hope that the Motor will meet your requirements, and after you have examined it, if there are any further corrections to make on it, you will return it to us, we will be glad to go into the matter with you further.

At the present time we are busily engaged in Government Work and are not giving much attention to this kind of work. However, if you will be patient, we assure you that we will give it our spare time and are most willing to help you.

The price we have quoted you is list for this type of motor, and should orders for quantities be placed, we can quote you more attractively.

Thanking you, we remain

Very truly yours,

WISCONSIN ELECTRIC CO.

PER

RIP:P

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

LOUIS H. HAMILTON
PRESIDENT & CHM. 1918

CHESTER E. LEACH
V. PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS.



WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL DUMORE SPECIALTIES

RACINE, WISCONSIN

June 24th, 1918.

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. Geo. Scherff,
17 Batter Place,
New York City, N.

Dear Sir:-

Your letter of the 18th inst.,
is at hand, regarding the building of a
special motor for you.

We have given the information
enclosed in your letter to our Engineers,
who says this enlightens the proposition
considerably, and they may be able to build
a motor that will meet with your requirements.

When anything further develops,
we will notify you to that effect.

Very truly yours,

WISCONSIN ELECTRIC CO.

RIP:P

PER

R. E. Leach

June 18, 1918.

Wisconsin Electric Company,

Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge receipt of your favor of June 7th, and note that your engineers find it impossible to build a motor with the amperage I specified. In this regard I would say, that it will be immaterial what amperage the motor consumes, the only requirement is that the motor should not overheat under the conditions that it will be used. From my former descriptions you will see that the motor will be at rest most of the time and will operate only occasionally when the arc lamps need feeding. I am not interested in the efficiency of the machine and the power required will be very small.

I have no doubt that your engineers will be able to meet these conditions and hope to hear further from you soon.

Yours very truly,

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTER H. BEACH
VICE PRES. & TREAS.

ARTHUR HUGUNIN
SECT. & TREAS.

WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL **DUMORE** SPECIALTIES

CABLE ADDRESS
"DUMORE RACINE"

RACINE, WISCONSIN

June 7th, 1918.



MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. Geo. Scherff,
17 Battery Pl.
New York City

Dear Sir:-

We referring to your letter of June 3rd
contemplated a special motor that we
has taken this for you. The writer
the third time the Engineers for
will make another advise that they
They state, however, to make this motor.
to build a motor but it is an impossibility
Could you make the amperes you require.
part of the work? better suggestions of this
points in building this motor. If you have any good
to have you give them to us. we would like
greatly help us in our further experiments. It would perhaps

Our shop is also crowded with a
good many Government orders, and are not free
to devote much of our time to special work.
We will, however, give this order our consideration
at a very early date.

RIP:P

Very truly yours,

WISCONSIN ELECTRIC CO.

PER

*Not in order in efficiency, and losses
of material. It will be as best method
of finding. We will make motor that will not
overheat under any condition.*

WISCONSIN ELECTRIC COMPANY

Racine, Wis. June 7, 1918.

Mr. Geo. Scherff,
17 Battery Plc., N.Y.C.

Dear Sir:

We have your letter of June 3rd, referring to the special motor that we contemplated building for you. The writer has taken this up with the Engineers for the time, and will advise that they will make another effort to make this motor. They state, however, that it is an impossibility to build a motor with the ampere you require. Could you make any better suggestions of this part of the winding? If you have any good points in building this motor, we would like to have you give them to us. It would perhaps greatly help us in our further experiments.

Our shop is also crowded with a good many Government orders, and we are not free to devote much of our time to special work. We will, however, give this order our consideration at a very early period.

Very truly yours,

Wisconsin Electric Co.

(Signed) By R. I. Pease

Dear George:

Please call me up
to-night about this -

Respectfully

Pa

June 3, 1918.

Wisconsin Electric Company,
Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge receipt of your favor of May 28th, and note your remark, that the special motor wound according to my specifications would not develop sufficient power to be of any service. I do not know, of course, under what conditions you have operated the motor, but the fact is, that I have the motor tested the idea and wound a motor myself some time ago in the same way, which operated satisfactorily in connection with my arc controller. I feel confident, therefore, if you would send me the motor that you constructed and give me an opportunity to test it, that it would be satisfactory. What I want is to find somebody who will make these machines for me in quantity, as I have not the necessary facilities; the other parts of the arc controller I intend to manufacture myself.

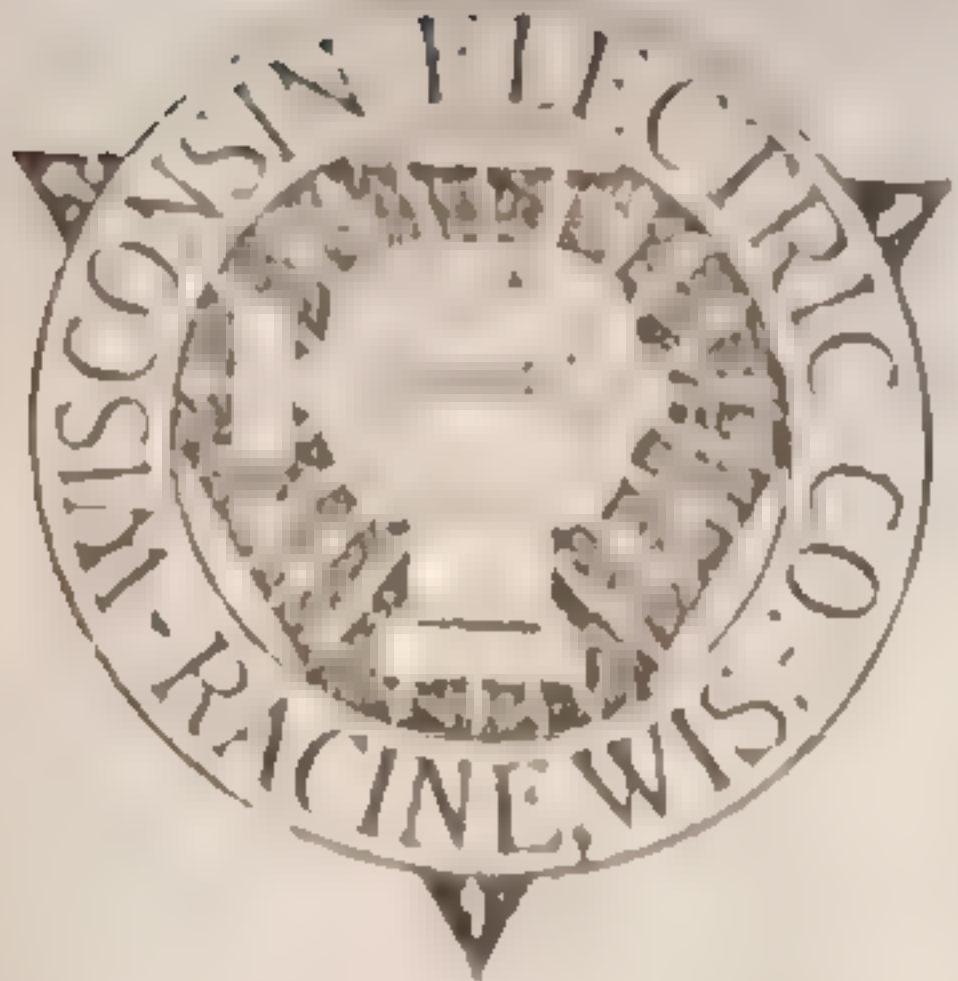
Hoping to hear further from you at an early date, I remain,

Yours very truly,

LOUIS H. HAMILTON
PRESIDENT & GEN. MGR.

CHESTER H. BEACH
VICE PRESIDENT

ARTHUR HUGUNIN
SECY & TREAS.



WISCONSIN ELECTRIC COMPANY

INCORPORATED

ELECTRICAL **DUMORE** SPECIALTIES

RACINE, WISCONSIN

May 28, 1918.

MANUFACTURERS
OF

PORTABLE GRINDERS

SEWING MACHINE
MOTORS

FRACTIONAL
H. P. MOTORS

POLISHERS AND
BUFFERS

ELECTRIC DRILLS

CLOTH CUTTERS

VACUUM CLEANERS

BILLIARD TABLE
CLEANERS

CLOTHES CLEANERS

ERASER CLEANERS

BLOWERS

HAIR DRYERS

SHOE DRYERS

DRINK MIXERS

Mr. George Scherff
17 Battery Place,
New York, New York

Dear Sirs:-

We received your letter of the 23rd
referring to a special sound motor that we were
to build for you.

No answer to our reply to your pre-
vious letters has as yet reached you. We
regret to inform you that we cannot serve you
with this kind of a motor. Our Engineers attempted
to build the motor of this kind, and report that
they were unsuccessful in building a motor as you
have outlined, that would develop sufficient power
to be of any service.

Very truly yours,

WISCONSIN ELECTRIC COMPANY

PER

RIP/HCS

May 23, 1918.

Wisconsin Electric Company,
Racine, Wisconsin.

Gentlemen:-

I beg to refer you to my letter of April 23rd and previous correspondence on the subject of a specially wound motor, which you were to make for me, and inquire when I may expect to receive this machine. There is a large demand for device in which this motor is to be used, I am very anxious to get the business and shall be obliged if you will do what you can for an early delivery.

Yours very truly,

Wisconsin Electric Company,
Racine, Wisconsin.

April 23, 1918.

Gentlemen:-

Your favor of April 4th reached me only to-day on account of my absence from the City.

I thank you for your readiness to make up the special motor for me and in reply to your questions wish to say the following.

The machines are to be used in connection with arc controllers for moving picture machines and projection lamps. In practice one of the field windings is connected across the arcs and the other across a rheostat in opposite direction, so that when the current through both circuits is equal, the magnetizing effect will be annulled and the motor will be at rest. Then, however, the carbons burn away, the current through one of the circuits will preponderate, the motor will start and operate the carbon feeding mechanism, feeding the carbons together until the current through both circuits is again equal. The motor, therefore, should have a strong starting torque with a weak field.

I should like you to use for this winding one of your universal motors, so that I may be able to make some tests with it on D.C. as well as A.C. The motor will rotate in both directions to take care of any change in the line voltage. In my experiments I have used a small motor of about the size of those used for mixing drinks, and I think that your Type C motor will be of sufficient power at the normal speed. The shaft extension on this motor is of sufficient length.

Trusting that with this additional information you will be able to make up the motor for me, and hoping to hear further from you soon, I remain,

Yours very truly,

C O P Y

WISCONSIN ELECTRIC CO.,
RACINE, WISCONSIN.

April 4, 1918.

Mr. George Scherff,
17 Battery Place,
New York City.

Dear Sir:

Your letter of March 29th, is received
in reply to ours of March 25th.

We have given this drawing to our engineer
who reports that the diagram is very clear, but for our
information we must know the following:

What current is to be wound for: A.C. or
D.C.? What direction of rotation is necessary and what is
the approximate H.P. required at any given speed? Is the
shaft extention on the Type C of the correct length?

It would further aid us in building this motor
if you know, and if you care to tell, what you are using this
machine for.

We would state definitely that we will be glad
to build this motor for you.

Thanking you to give us this information, we
remain,

Very truly yours,

Wisconsin Electric Co.

March 29, 1918.

Wisconsin Electric Company,

Racine, Wisconsin.

Gentlemen:-

I beg to acknowledge the receipt of your favor of March 25th, in reply to my letter of the 21st. I find that I have not made myself clear, as you do not seem to have understood my question. I am aware, of course, that you do not have differentially wound motors in stock, and my inquiry had the purpose of asking, if you would be willing to make such a machine for me. What I need is merely a special field winding on one of your regular motors, and I enclose a diagram showing this winding. The fields should be wound with two wires, both wires being wound at the same time, thus making two coils for each field. One set of these field coils should be connected in series - see circuit A of diagram - and the other set should be connected in series with the armature - see circuit B of diagram - and the four terminals brought out. Another important requirement is, that each one of the circuits A and B should take no more than about one-twentieth ampere on a 60 volt circuit. I believe that your type C motor would suit my purpose, if it is possible to get the required field windings into this motor, otherwise a type D motor will do. Your engineer, of course, will have no difficulty in determining this from the data given.

I beg to enquire again, if you are willing to make up this machine for me for a test, and if so, let me know your price

Wisconsin Electric Co. 39, 1918.

-2-

of the same in lots of one, two and three hundred.

Your machine has been recommended to me by Mr. Nikola Tesla, and therefore I should like to use it in connection with my controllers.

Yours very truly,

Encl.

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n,
d

March 21, 1918.

Wisconsin Electric Company,
Racine, Wisconsin.

Gentlemen:-

Your address has been furnished me by Mr. Nikola Tesla, whom I consulted concerning a specially wound motor which I require. What I need is a differentially wound motor of a fractional horse-power, and I beg to inquire if you would be willing to make up such a machine for me. If so, kindly send me a pamphlet showing the sizes and types of motor you manufacture and I shall send you full specification.

The motor is intended for use in connection with a new kind of circuit controller, for which there seems to be a considerable market.

Yours very truly,

TESLA, Nikola: *physicist*

1857 in

Electrician, inventor; b. Smiljan, Lika, border country of Austria-Hungary; son of a distinguished Greek clergyman and orator, and of Georgiana Mandić, a famous woman and inventor, whose father was also an inventor; ed. in elementary school of native place, 4 years in public school in Gospić, Lika, 4 years in Lower Real School, Gospić, and 3 years in Higher Real School, Carlstadt, Croatia, where was grad. 1873. Originally destined for the clergy, but prevailed upon parents to send him to the Polytechnic School in Gratz, where for four years he studied mathematics, physics and mechanics, following with two years in philosophical studies at Univ. of Prague, Bohemia. Began *his* practical career, 1881, in Budapest, Hungary, where he made his first electrical invention, a telephone repeater, and conceived the idea of his rotating-magnetic field; thence went to France and Germany, where was successively engaged in various branches of engineering and manufacture; since 1884, in U.S., of which is a naturalized citizen. Author of numerous scientific papers and addresses. Among his inventions and discoveries are: System of arc lighting, 1886; a Tesla Motor, and system of alternating current power transmission, popularly known as 2-phase, 3-phase, multiphase and polyphase systems, 1888; system of electrical conversion and distribution by oscillatory discharges, 1889; generators of high-frequency currents and effects of these, 1890; transmission of energy through a single wire without return, 1891; the Tesla Coil or Transformer, 1891; novel system of electric lighting by Tesla tubes, 1891; investigations of high-frequency effects and phenomena, 1891-93; system of wireless transmission of intelligence, 1893; mechanical oscillators and generators of electrical oscillations, 1894-95; ~~researches and discoveries in radiations, material streams and emanations, 1896-98; high-potential magnifying transmitter, 1897; system of transmission of power without wires, 1897-1900; economic transmission of energy by refrigeration, 1898; art of Telautomatics, 1898-99; discovery of stationary electrical waves in the earth, 1899; burning of atmospheric nitrogen, and production of other electrical effects of transcending in-~~

*He is a resident
He is the*

Vol 2

1891-92

1893-94

1895-96

1897-98

1899-1900

1901-02

NIKOLA TESLA, Electrician, Physicist and inventor, born 1857 in Smiljan, Lika, border country of Austria-Hungary, as the son of a distinguished Greek clergyman and orator, and of Georgiana Mandic, a famous woman and inventor, whose father was also an inventor. His education began in the elementary school of his native place, continued four years in the public school in Gospic, Lika; four years in Lower Real School in Gospic, and three years in Higher Real School, Carlstadt, Croatia, where he was graduated in 1873. Originally he was destined for the clergy, but prevailed upon his parents to send him to the Polytechnic School in Gratz, where for four years he studied mathematics, physics and mechanics, following with two years in philosophical studies at the University of Prague, Bohemia. He began his practical career 1881, in Budapest, Hungary, where he made his first electrical invention, a telephone repeater, and conceived the idea of his rotating magnetic field, whence he went to France and Germany, where he was successively engaged in various branches of engineering and manufacturing; since 1884 he is a resident naturalized citizen of the United States, of which he is a naturalized citizen.

Mr. Tesla is the author of numerous scientific papers and addresses, and honorary or regular member of many scientific societies, institutions and academies in the United States and abroad; he is a life member of the British Association for the advancement of Science and a Fellow of the Royal Institution of Great Britain; M. A. of Yale and L. D. of Columbia, both degrees being honorary, and a Doctor of Science of the Vienna Polytechnic School, the latter distinction being conferred upon him in acknowledgment of his discoveries of the principles of wireless power transmission; the Elliott Cresson gold medal was awarded him in recognition of original work first presented before the Franklin Institute and the National Electric Light Association in 1893, in which wireless transmission was one of the most important chapters.

Among his inventions and discoveries are: System of arc-lighting, 1886; Tesla motor and system of alternating current power transmission, popularly known as two-phase, three-phase, multi-phase or poly-phase systems, which have created

a revolution in electrical engineering; the system of electrical conversion and transmission by oscillatory discharges, 1888; generators of high-frequency currents; transmission of energy through a single wire with return, 1891; the Tesla coil or transformer, which has proved an indispensable adjunct in wireless transmission, 1891; investigations of high-frequency effects and phenomena, 1891 - 93; system of wireless transmission of intelligence, 1893; mechanical oscillators and generators of electrical oscillations, 1894; his researches and discoveries in novel radiations, material streams and emanations, ^{were} published in a series of papers in the Electrical Review, New York, 1896 - 1898, in which he announced all the salient phenomena later attributed to radium; high-potential magnifying transmitter, 1897; system of transmission of power without wires, 1897 - 1905; economic transmission of energy by refrigeration, 1898; art of Telautomatics, 1898-99; discovery of stationary electrical waves in the earth, 1899; burning of atmospheric nitrogen, and production of other electrical effects of transcending intensities, 1899-1900; method and apparatus for magnifying feeble effects, 1901-1902; art of individualization, 1902-1903; the development of his system of world-telegraphy and telephony and of the transmission of power without wires has engaged much of his attention since that time. A number of discoveries in the electrical field made by Mr. Tesla, about which he has not yet announced, he considers of greater importance than any electrical work he has so far done. His most important recent work is the discovery of a new mechanical principle, which he has embodied in a great variety of machines, as reversible gas and steam turbines, pumps, blowers, air compressors, water turbines, mechanical transformers and transmitters of power, hot-air engines, etc. This principle enables the production of prime movers capable of developing ten horse-power, or even more, for each pound of weight. By their application to aerial navigation, and the propulsion of vessels high speeds are practicable, and the results so far obtained are very promising.

a revolution in electrical engineering practice and are now universally adopted
[1888]; novel system of electric lighting by Tesla tubes, 1891;

11/23/54

III. 10-11-1968

Since the beginning, the growth of the new art and industry has been phenomenal. Hundreds of sets are being turned out daily throughout the world. The sets have proved an ideal tonic for the human heart action and circulation, the skin of constructive value by the warmth they create, they vivify atrophied or paralyzed parts of the body, allay the sufferings of millions of lives. I assure you that I have done more for humanity by this medical treatment than by all my other discoveries and inventions. No that as it may, I feel certain that the MECHANICAL THERAPY, which I am about to give to the world, will be of incomparably greater benefit. Its discovery was made accidentally under the following circumstances.



- 2 -

I had installed in the laboratory, 35 South Fifth Avenue, one of my mechanical oscillators with the object of using it in the exact manipulation of various physical constants. The machine was bolted in vertical position to a platform supported on pneumatic cushions and was operated by compressed air, performed minute oscillations at absolutely invariable intervals, but is to say, concerning its functioning in this respect, it was so perfect that it indicated the hour with astronomical precision. One day, as I was making some observations, I stepped on the platform and the vibrations imparted to it by the machine were transmitted to my body. The sensation experienced was as strange as agreeable, and I asked my assistants to try. They did so and were surprised and pleased with the result. But a few minutes later some of us, who had stepped upon the platform, felt an unpleasant vibration, and then a stupor which had to be promptly satisfied. These incoherent and oscillations stimulated the powerfully the peristaltic movements which propel the food-stuffs through the alimentary channels. A means was thus provided whereby the contents can be perfectly regulated and controlled, will, and without the use of drugs, specific or general, in internal applications.

When I began to proceed with my assistants MECHANICAL THERAPY we used to finish our meals quickly and rush back to the laboratory. We suffered from dyspepsia and various stomach troubles, biliousness, constipation, flatulence and other disturbances, all natural results of such irregular habit. But after only a week of application, during which I improved the technique and my assistants learned how to take the treatment to their best advantage, all these forms of sickness disappeared as by enchantment and for nearly four years, while the machine was in use, we were all in excellent health. I cured a number of people, among them my great friend



- 3 -

Mark Twain whose books saved my life. He came to the laboratory in the worst shape suffering from a variety of distressing and dangerous ailments but in less than two months he regained his old vigor and ability of enjoying life to the fullest extent. Shortly after, a great calamity befall me: my laboratory was destroyed by fire. Nothing was insured and the loss of priceless apparatus and records gave me a terrible shock from which I did not recover for several years. The enforced discontinuance of MECHANICAL THERAPY also caused me deep regret. I had evolved a wonderful remedy for all of inestimable value to mankind and invented apparatus offering unbounded commercial possibilities but when I came to consider practical introduction I realized that it was entirely unsuitable. It was big, heavy and noisy, called for a continuous supply of oil, part of which was discharged in the room as fine spray; it consumed considerable power and required a number of objectionable accessories. During the succeeding years I made great improvements and finally evolved a design which leaves nothing to be desired. The machine will be very small and light, operate noiselessly without any lubricant, consume a trifling amount of energy and will be, to my knowledge, the most beautiful device ever put on the market. The intention is to exhibit it in action at the occasion of my annual reception in honor of the Press which has been, unfortunately, delayed this year, and I anticipate that it will elicit great interest and receive wide publicity. Unless I am grossly mistaken it will be introduced very extensively and, eventually, there will be one in every household.

The practical application of MECHANICAL THERAPY through my oscillators will profoundly affect human life. By insuring perfect regularity of evacuations the body will function better in every respect

and life will become
enjoyable. One of
the most common
causes of the
failures, which are
most of the organs
of the stomach. An
derivation from the
tissue of organs will
be able to expect that
patients alone and
season will be cured
even in case of a
skilled physicians
position variable
They stimulate strongly
bladder and other organs
times they must contribute
doing. Persons suffering
will be especially helped
the greatest benefit will
person who will be able
maintaining abstinence,
time and money and
they will improve in
eyes and complexion and
that long continued
remain beauty never
be forgotten that the
patent medicines and
taken internally, by
themselves to an early
to humanity.

no such safer and more
as important results will
be attained possibly to
in the matter of heart
disease caused by some acute
process and normal operation
will be
and removal of toxic materi-
als. It is reason-
able to expect that other healthful
conditions of the body will be obtained
such as the liver, spleen, kidneys,
bladder and other organs and by these desirable ac-
tions they must contribute not a little to well
being. Persons suffering from anemia of any form
will be especially helped by the treatment. But
the greatest benefit will be derived from the
person who will be able to reduce without the usual
maintaining abstinence, privation, sacrifice of
time and money and therefore they have to ensure
they will improve in appearance, acquire clear
eyes and complexion and it may be safely predicted
that long continued treatment will bring forth
remain beauty never known before. It is not to
be forgotten that the elimination of countless drugs,
patent medicines and specific remedies of all kinds
taken internally, by which millions of people doom
themselves to an early grave, will be of untold good
to humanity.

THE NEW TESLA ELECTRIC HEATER.

STRICTLY CONFIDENTIAL.

This device is greatly superior to the usual flat coil type in efficiency and other respects. It consists of a thin polished metal tube acting as reflector and a base equipped with switch and connecting terminals, and carrying spaced resistor wires concentric with the tube and at a certain distance from the inner surface of the same. In this arrangement the diffuse radiation is virtually eliminated, and the heater operates as if the resistor were not present, the rays being projected from the reflector radially to the central or focal region occupied by the boiling pot.

The principal advantages thus secured are the following:

1. A very high efficiency, as much as 96% being attainable.
2. The efficiency is practically the same whether the pot is large or small, since the density of the rays is inversely as the diameter of the vessel.
3. Due to these features the current consumption is hardly more than half of that in the best heaters of the type referred to.
4. The resistor has a relatively much longer life and can be made to last almost indefinitely in some cases. Also less wire can be used if desired.
5. The heat being largely confined to the range, the kitchen remains comparatively cool.
6. Another practical advantage is greater safety from a variety of accidents frequently occurring with ordinary ranges.
7. The new heater is especially adapted for use on shipboard, Pullman cars, aerial vehicles and automobiles.
8. Likewise it is suitable for all kinds of service on the table, being free from the objections of the present type.
9. It saves considerable time in certain applications.
10. Owing to simplicity, the cost of manufacturing is low.

the subject you wish to write
about. In order to explain this
phenomenon Einstein has
presented the quantity "Lambder"

My theory of gravitation
explains this phenomenon
perfectly

N. T. April 18. 1932.

We read a great deal about ~~the~~
~~cosmic rays~~ matter being
changed into force and force
being changed into matter
by the cosmic rays. This is
absurd. It is the same as
saying that the body can be
changed into the mind, and the
mind into the body. We know
that the mind is a functioning
of the brain, and as the same
material force is a functioning of
matter. Without a body there
can be no mind, without matter
there can be no force.

Einstein has for years developed
formulas explaining the mechanism
of the cosmos. In doing this he
overlooked an important factor,
namely the fact, namely that some
of the heavenly bodies are increasing
in distance from the sun. This
is the same as writing for a
business letter and forgetting

PROSPECTUS FOR MR. TESLA'S NITRATES COMPANY.

~~Mr. Nikola Tesla, whose inventions in high-frequency~~
~~currents have formed the basis of so many~~
~~more recent practical applications of electricity, and which by~~
~~their world-wide recognition have given this inventor a pre-eminent~~
~~position in the field of electricity, has, by a series of discover-~~
~~ies extending over many years, and all protected by broad patents~~

Has evolved
a new and
efficient
process for

~~in all the great countries of the world, involved a system for~~
~~the fixation of atmospheric nitrogen, in other words, for the~~
~~conversion of the nitrogen and the oxygen of the~~

~~fixed compound (nitric acid or its compounds), which, by its~~
~~tremendous value and wide-reaching influence, bids fair to outrank~~
~~many times his wonderful invention of the alternating current motor.~~
~~Mr. Tesla in a field peculiarly his own, has discovered -~~ (over)

~~First, that his high-frequency electric discharges in~~
~~the atmosphere give in a much more effective degree a peculiar~~
~~electric chemical stress, which brings about this most difficult~~
~~of combinations; a stress which all workers in this field have~~
~~recognized for years as being one which not only must be of~~
~~tremendous power, but of almost infinite suddenness. The time~~
~~element which has so materially interfered with the success of~~
~~other workers in this field, by Mr. Tesla's invention, been~~
~~almost entirely removed as a objection.~~

~~Second, Mr. Tesla has discovered a new means of obtaining phenomena~~
~~of very high voltages (running in the millions of volts) from~~
~~apparatus of most moderate power, which has enabled him to obtain the~~

early ~~of the first~~
+ He ~~has~~ recognized the
a departure, and
ago he made the
the electric fixation of atmos-
an industry next to that of iron
done towards commercial exploitation
shown by the fact
plants have been erected
Norway, ~~which alone~~
Lorraine and ~~France~~ 120,000 ~~tons~~
is contemplated and fifty million dollars have been already engaged in the industry.
for ~~all~~ of these undertakings

immense possibilities of such
published a few years
prediction that ~~the~~
hydrogen would before long develop into
importance. At that time nothing had been
done but his foresight is
in various countries extensive
large ~~investments~~ have been made. In
since ~~the~~ ~~use of~~ one quarter million
of ~~these~~ ~~undertakings~~ are ~~being~~

Method and apparatus utilizing no more than a few percent
of the electric energy of the current, and calling for a
first cost so great, ~~that the~~ interest and maintenance charges have rendered the
business indifferently attractive to capital.

The fixation or burning of atmospheric nitrogen
is effected economically ~~by~~ by lightning discharges which
precipitate from four to twenty pounds of nitrogen
compounds per acre per year, an enormous amount
when considering their scarcity. This high efficiency
is due to the great power, suddenness, length and volume of
the discharges, and instant cooling resulting therefrom.

These ideal requirements are fulfilled in
the new ~~process~~ ^{which is the result of years of labor and is now} process owned by the Tark Nitrogen Company.

The "Tark Transformer" ~~enables~~ ^{makes it possible to obtain} the production of

electrical effects of virtually unlimited power, surpassing
even those of lightning, ~~as has been demonstrated in actual experiments~~ by its inventor.

The "high frequency" ~~or~~ ^{so-called} Tark currents ~~are~~
have the peculiar property of exciting the dormant effi-
cacies of nitrogen, causing the gas to combine ^{more readily and} with
a lesser expenditure of energy.

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attenuated are so necessary for the highest efficiency.

Third, by virtue of the peculiar nature of Mr. Tesla's transformer, he is enabled to produce a certain tonnage of product with such a small amount of apparatus and a consequently reasonable investment as to multiply a thousand-fold, the capacity efficiency of his plant. This item is of vast importance in connection with this subject. Many experimenters have produced nitric acid from the atmosphere and there are now some very large plants engaged in this industry, especially in Norway, that involves upwards of \$50,000,000, and which will absorb some 200,000 horse power when it is fully expanded, but without exception all these efforts have resulted in a first cost of apparatus so great that the interest and maintenance alone thereof puts a fixed charge upon each ton of the product that has heretofore rendered the business indifferently attractive to capital. Ignoring, there-

~~for the moment, the increased efficiency claimed by Mr. Tesla, or his novel method of burning the atmosphere, and granting only that he shall burn it as it has been done before by others~~
~~that his devices are applied to the old process, the commercial~~
~~ere, it will be readily seen that if he can reduce the cost of the~~
~~advantages secured will still be such as to make the success~~
~~apparatus from \$100. per ton of output to \$8. or less, it simply~~
~~of the project absolutely certain, if power can be had at a reasonable price, for~~
~~remains to get power at a sufficiently reasonable price to make~~
~~for the present, instead of costing \$50-100 dollars per ton of annual product, will cost only~~
~~the plant, instead of costing \$50-100 dollars per ton of annual product, will cost only~~
~~and its salts (and all nitrates prepared thus from the atmosphere~~
~~corresponding expenditure of eight dollars, or less. From it can be made all the acids, salts, and~~
~~are pure) sold from \$100. to \$200. per ton, and over the acids~~
~~of commerce, such as the Chili saltpeter, with 5% of~~
~~100-200 dollars per ton. Its purity is (kind of one)~~
~~impurities, sell for \$55. and better. It will therefore be~~
~~what a small charge of investment of \$8. or \$10. per ton of put-~~
~~put becomes. The operation of these plants, like those of hydra-~~
~~electric installations, require but little labor. There is no essential~~
~~and care.~~

**** & This inconceivable suddenness, removes one
great obstacle which has so materially inter-
fered with the success of the old method and appliances.
Tosli means for generating enormous electrical
pressures with apparatus of surprisingly small
dimensions, capable of the production of dis-
charges on arcs of the great length and volume
so necessary to the highest efficiency.

By this means it is possible to operate units
of any capacity, however great, to burn the air
at any desired rate and thus increase
a thousand fold the effectiveness of the plant.
The Tosli apparatus may be likened to a turbine
running at a stupendous speed, while that ~~old~~
~~apparatus~~ ~~now employed~~ is comparable to
an old fashioned engine turning slowly. For
the same performance the latter is over 200 times
more cumbersome and expensive. ~~This is~~
~~a ~~very~~ ~~large~~ ~~and~~ ~~costly~~ ~~first~~ ~~cost~~~~
~~and ~~first~~ ~~cost~~~~

This is of vital importance to
the enterprise reducing as it does, to a mini-
mum the first cost ^{the burden of} and fixed charges. To
illustrate, ~~namely~~ that disregarding xx (other side)

part ~~of the plant~~ ^{of the plant} ~~subject to rapid wear and tear;~~ ^{deterioration} in fact, most of it is ~~good for one hundred years,~~ ^{and metal and is good for centuries.} consists principally of brick ~~buildings, transformers, brick or tile combination chambers and piping,~~ ^{transformers or their equivalent.} The process is a continuous one and once started ~~requires no manual~~ ^{needs} labor, ~~the electricity~~ ^{the electric} continuing to burn the atmosphere into nitric fumes, which in turn combine with water to make nitric acid, and this goes on until the ~~electric~~ ^{current} is switched off, and immediately recommences when the ~~current~~ ^{current} is ~~again~~ ^{switched} on.

There is no loss upon the discontinuing of the process for an hour, a day, a month or a year, ~~except~~ ^{other than} that ~~due to~~ ^{the} plant lying idle and carrying its ~~own~~ ^{no small} interest. It is obvious, therefore, that it ~~only runs~~ ^{to obtain power at a sufficiently} ~~reasonable price to make an~~ ^{revolutionary process a vast} ~~industry of this~~ ^{can be built up} with a very reasonable investment of capital yielding annually a return many times the first cost.

The Tesla Nitrates Company owns the exclusive rights under the ~~United States~~ ^{and} patents granted to ~~Mr.~~ ^{and} Tesla, applicable to the manufacture of nitrates from the atmosphere, ~~which are the following:~~

~~It will also own any~~ ^{improvements} ~~future inventions when they shall be made,~~ ^{he may make} relative to this subject, ~~and will get the benefit of his assistance and advice.~~

^{insert paragraph here} ~~It is proposed to immediately make a demonstration of the~~ ^{valuable advantages of the novel process with a model plant} ~~on the commercial magnitude in the immediate vicinity of New York~~

City, where experts and investors may see ~~for themselves~~ ^{and judge for themselves of their value.} the practical application of ~~these~~ ^{his} inventions, ~~in a full sized unit~~

apparatus. ~~In making this test, Mr. Tesla will have at his~~

~~disposal, a plant that has already cost over \$200,000, a large~~

~~part of which will be immediately available.~~ ^{It is estimated that}

~~this test will involve an expenditure of \$25,000 for the~~

~~plant~~ ^{will be ample to meet}

taking of the additional apparatus, partly for attendance and
all expenses in the connection. Undoubtedly this plant will serve
operation and partly for the very full and exhausted demonstra-
tion which it is proposed to be made.
The important purpose of exhaustively testing the latest improvements
prior to their application on the large scale contemplated.

XXXX ~~off~~ Tester is now devoting himself to
the perfection of plans for ~~some~~ a large ^{installation} plant
being assisted in this work by a ~~man~~ ^{man}
of international repute ~~who has been for a long time~~
a long experience in the fixation of Nitrogen
by the old method and is thoroughly familiar
with all ~~the~~ facts pertaining to the manufacture
and sale of the products. In the mean
time X K

TESLA'S NEW SYSTEM OF FLUID PROPULSION

In subduing the forces of Nature to his service man must invariably avail himself of some process in which a fluid acts as carrier of energy, this being an essential step in any industrial undertaking dependent on mechanical power. Evidently then, a discovery or radical departure in that domain must be of extreme importance and far-reaching influence on the existing conditions and phases of modern life.

Fluid propulsion is now effected by means of pistons, vanes or blades, which entail complexity of construction and impose many limi-

tations on the propelling as well as propelled mechanism and its performance. Tesla has dispensed with these devices and produced machines of extraordinary simplicity which, moreover, are in many other respects superior to the old types universally employed. A few words will be sufficient to convey a clear idea of his invention.

Every fluid, as water or air, possesses two salient properties: adhesion and viscosity. Owing to the first it is attracted and clings to a metallic surface; by virtue of the second it resists the separation of its own particles. As an inevitable consequence a cor-

tain amount of fluid is dragged along by a body propelled through it; conversely, if a body be placed in a fluid in motion it is impelled in the direction of movement. The practical forms of Tesla's apparatus consist of flat, circular disks, with central openings, mounted on a shaft and enclosed in a casing provided with ports at the peripheral and central portions. When deriving energy from any kind of fluid it is admitted at the periphery and escapes at the centre; when, on the contrary, the fluid is to be energized, it enters in the centre and is expelled at the periphery. In either case it traverses the in-

terstices between the disks in a spiral path,
power being derived from, or imparted to it,
by purely molecular action. In this novel man-
ner the heat energy of steam or explosive mix-
tures can be transformed with high economy in-
to mechanical effort; motion transmitted from
one shaft to another without solid connection;
vessels may be propelled with great speed; wat-
er raised or air compressed; an almost perfect
vacuum can be attained, substances frozen and
gases liquefied.

While this improvement has the
breadth and applicability of a fundamental
mechanical concept, the widest field for its

commercial exploitation is, obviously, the thermodynamic conversion of energy.

The commercial value of a prime-mover is determined by its efficiency, specific performance relative to weight and space occupied, cheapness of manufacture, safety and reliability of operation, adaptability to construction in large units, capability of running at high peripheral velocity, reversibility, and a number of other features of lesser importance. In the majority of these a machine, operating on the new principle, excels. But there is one quality which is most desirable in a thermo-dynamic transformer from the

economic point of view, and that is great resistance to deterioration and impairment of efficiency by heat.

The employment of high temperature is of such vital bearing on the efficiency of prime-movers that it is of paramount importance to extend the thermal range as far as practicable. In the present state of the art radical progress towards more economical transformation of the energy of fuel can only be achieved in that direction. Such being the case, the capability of the machine to withstand deteriorating effects of great heat is the controlling factor in determining its commercial value. In that most desired quality the

Tesla turbine surpasses all the older types of heat motors. The Diesel and other internal combustion engines are fatally limited in this respect by their complete dependence on closely fitting sliding joints and unfailing supply of clean lubricant; while in the present forms of turbines buckets, blades and inherent mechanical deficiencies impose similar restrictions. These parts are too delicate and perishable to serve as elements of a gas turbine and this has been the main obstacle in the way of its successful realization. The rotor of the Tesla turbine presents a relatively enormous

active area and the wear is quite insignificant as the fluid, instead of striking against the propelling organs in the usual destructive manner, flows parallel with the same, imparting its momentum by adhesion and viscosity instead of impact. Moreover it has been shown that the efficiency of this form of rotor is not impaired to any appreciable degree by a roughening of the disks and that it operates satisfactorily even if the working medium is corrosive to an extent.

The universal adoption of steam as motive power under certain standard conditions, settled upon in the course of time, gradually forced upon the minds of engineers the Rankine

15-541
15-541

Cycle Efficiency as criterion of performance and long continued endeavors to improve the same have finally resulted in complex multistage constructions entirely unsuitable for high temperatures. The Tesla turbine, by virtue of its exceptional heat-resisting and other unique properties, makes possible the attainment of great fuel economy with but a single stage, incidentally offering the additional advantages of an extremely simple, small, compact, and reliable mechanism. But perhaps the chief commercial value of this new prime-mover will be found in the fact that it can be operated with the cheapest grade of crude oil, colloidal fuel, or powdered coal, containing con-

30

siderable quantities of grit, sulphur and other impurities, thus enabling vast sums of money to be saved annually in the production of power from fuel.

The Tesla turbine also lends itself to use in conjunction with other types, especially with the Parsons with which it forms an ideal combination. Although its practical introduction has been delayed by the force of circumstances, a number of years have been spent in exhaustive investigations and experiments on the basis of which the performance in any given case can be closely calculated. The first public tests were made before the

outbreak of the war at the Waterside Station of the New York Edison Company where several machines, ranging from 100 to 5000 h.p., were installed and operated with satisfactory results. That the invention was appreciated by the technical profession may be seen from the excerpts of statements by experts and periodicals printed on the annexed page.

The salient advantages of the Tesla turbine may be summed up as follows:

EFFICIENCY: The most economical of the present prime-movers is the Diesel engine.

But, quite apart of many practical and com-

mercial drawbacks, inseparable from this type, it is entirely dependent on comparatively expensive oil, so that the Tesla Gas Turbine, working with much cheaper fuel, would have the better in competition even if its efficiency as a thermodynamic transformer were appreciably lower, all the more so in view of its greater mechanical perfection.

Referring to turbines, all of which are surpassed by the Parsons in economy as well as extent of use, definite limits have already been reached and the only possibilities of saving fuel exist in the employment of steam at very high superheat

and utilization of gas or oil as motive fuel.

But none of the primemovers mentioned is

adapted for such operation and although every

effort has been made in this direction, no

signal success has been achieved. The super-

heat is at most 250° F. this being considered

the maximum permissible. All attempts to con-

siderably extend the thermal range have failed

chiefly because of the inability of bucket

structures to withstand the action of intense

heat. The Tesla Turbine can operate quite

satisfactorily with the motive agent at very

high temperature and, owing to this quality.

lends itself exceedingly well to these purposes.

SPECIFIC PERFORMANCE: In this particular it is superior to all other forms. Each disk is virtually the equivalent of a whole bucket wheel, and as many of them take up but a small width the output of the machine, considering its weight and size, is surprisingly great. This, while not being a measure of efficiency, is nevertheless a feature of considerable importance in many instances.

CHEAPNESS OF MANUFACTURE: The new turbine can be produced without a single machined part except the shaft, all the disks being punched

and the casings pressed. By this method, with proper machinery installed on a large scale, the cost of production may be reduced to a figure never deemed possible in the construction of an engine. What is more, this can be done without material sacrifice of efficiency as small clearances are not essentially required.

SAFETY AND RELIABILITY OF OPERATION: There is an ever present danger in the running of high speed machines. A bucket turbine may at any moment run away and wreck the plant. Such accidents have happened again and again and this

peril has often proved a deterrent to investment.

A remarkable quality of this turbine is its complete safety. As regards the wear and tear of the propelling organs it is significant and, in any event, of no consequence on the performance.

ADAPTABILITY TO CONSTRUCTION IN LARGE UNITS: In all the present machines there is a distinct limit to capacity, for although large units can be manufactured, they are very costly and difficult to manage. The new turbine is so simple and the output so large that the limits in this direction can be greatly extended.

RESISTANCE TO DETRIORATION BY HEAT AND OTHER

AGENTS:

In this feature again it has an overwhelming advantage over the old types in which the maintenance of smooth surfaces and sharp edges is indispensable to efficient working. In the Tesla Turbine, for the reasons already stated, the destructive actions of heat and corrosive agents are much less pronounced and of relatively negligible effect. This fact has a most important bearing on the saving of fuel.

CAPABILITY OF RUNNING AT HIGH PERIPHERAL SPEED:

In this respect also it is superior to others. The rotating structure carries no load and is

excellently adapted to withstand tensile stresses. Judging from the most recent turbine practice this quality should be of special value.

REVERSIBILITY: The present turbines are greatly handicapped by their incapability of reversal which is a very serious defect in certain applications, as the propulsion of vessels, necessitating the employment of auxiliary turbines which detracts from the propulsive power and adds materially to the cost of production and maintenance of the equipment. The Tesla Turbine has the unique

property of being reversible; not only this but it operates with the same efficiency in either direction. For marine purposes it therefore constitutes an ideal motor whether used alone or in conjunction with older types.

Besides the above it possesses other desirable features, constructive and operative, which will add to its value and adaptability to many industrial and commercial uses as, railroading, marine navigation, aerial propulsion, generation of electricity, refrigeration, operation of trucks and automobiles, hydraulic gearing, agriculture, irrigation, mining and similar purposes.

C. B. Richards, Professor Emeritus of Mechanics, Yale University:
"I am amazed at the development of power given by
the turbine and stunned by the exhibit."
W. Sargent, Chief Engineer and Turbine Expert: "I am impressed
with the newness and novelty of the underlying pr-
ciple of this invention. It is such as will claim
the attention and admiration of anyone of a scien-
tific turn of mind in a mechanical direction."
Reynold Jannay, Chief Engineer, Universal Transmission Co: "It
is a great invention."
Brigadier Allen of the War Department: "Something new in the
Officers are greatly impressed with it."
Miller Reese Hutchinson, Chief Engineer: "It is the greatest
thing of the age."
Arnold Irinyi, Chief Engineer, Colfeurungs-Gesellschaft, Cerna
"The ideal of the turbine engine."
B. E. C. Collins (Power Plant Economist): "It is a wonderful
The Motor World: "The new principle unquestionably is a great
contribution to science and engineering, great in its
simplicity and breadth of application."
Scientific American: "Considered from the mechanical standpoint
the turbine is astonishingly simple and economical
in construction, should prove to possess such a
ability and freedom from wear and breakdown as to
surpass all in these respects. It is a advance of an
type of steam or gas motor in the present day."
Engineering Magazine: "An entirely new form of prime mover with
interesting possibilities."
Technical World Magazine: "The Tesla turbine is the apotheosis
of simplicity. It is so violently opposed to all
precedent that it seems unbelievable."

From Numerous Articles and Comments:

"The turbine is different in principle to any he-
tore in use and one which will take less room
less coal than the best engine now running".....
"Turbine of revolutionary design"..... "Improved
in dynamics which promises revolutionary results
"Results seem revolutionary to the point of stag-
gering the imagination"..... "This motor will rev-
olutionize the turbine industry"..... "Wonderful motor
Extraordinary mechanical principle"..... etc. etc



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in honor of their Excellencies

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Ambassador of Czechoslovakia

tendered by

DR. NIKOLA TESLA

on the occasion of his

EIGHTY-FIRST BIRTHDAY



HOTEL NEW YORKER, NEW YORK
SATURDAY JULY 10, 1937



Hides - 1900

Menu

§ □ §

Amontillado Glace

MELON MIEL ROSÉ

ESSENCE JULIENNE AU TOMATE GELEE

Liebfraumilch

TRUITE DE RIVIERE AUX FINES HERBES
AVEC BROCCOLI EN BRANCHE

Chateau Pontecanet

CANARD EN CASSEROLE A LA TESLA

Cognac Martell

Cordon Bleu

GATEAU SOUVENIR
AVEC FRAISES GENIEVREES
CHATEAU d'YQUEM

Mount Vernon — 1921

Haig & Haig

MOCHA EN DEMI-TASSE

Cigars
Cigarettes

Amontillado Glass

Electromech

Seven Portraits

Cognac Martell
Cordon Bleu

Mount Vernon — 1921
Hale 5 Hale

Cigars
Cigarettes

FOR ACCOMPANIMENT.

Nikola Tesla's world fame is based on the inventions which he made during the last ten years of the past century. They lie in the electrotechnical field, especially in the field of low and high frequency alternating currents, and they are the result of extremely fruitful research work. Since that time there has been developed a mighty and many-sided alternating current industry which is still growing to-day, but Tesla's name is mentioned ever more rarely in connection with this industry, although it is not unknown that he had an eminent part in laying the foundations of the electrical industry.

In this book his countryman, S. Boksan, has collected an abundance of original material about Tesla's life work and discussed it historically and critically in its bearing on the complete development of the electrical industry, so that the book offers a welcome opportunity to gain an inspiring insight into the creative labors of a genius and pioneer of the electrical industry.

Not rarely has the question been raised why, in the modern commercial exploitation of electricity, Tesla does not take the part which might be expected in view of the undimmed greatness of his inventions. Technical men, according to their specialt judge differently the disappointments which have not appeared to Tesla. For me it lies near to point out, in respect to the field of wireless telegraphy, the manifold variations which our views have undergone in the course of time. The conception of the Hertzian waves has already changed, and that in a sense which

has not been favorable to the appreciation of Tesla's merit in wireless telegraphy.

Originally only such waves as Hertz himself had employed were called Hertzian waves, that is, waves of about one meter in length. The long waves of wireless telegraphy differ from them in many respects. They do not propagate in such straight lines as true Hertzian waves and also do not spread out in free space, but at the surface of the earth. If the description of wireless transmission of energy by means of Hertzian waves is possible was therefore in the first instance at least problematical; and it is probable that Tesla would not have been at all understood, if in the nineties he had explained his results by Hertzian waves.

It was only about the turn of the century that Max Abraham succeeded in proving that the waves emitted by a grounded transmitting conductor, excited by high frequency currents, can be calculated by the same equations as real Hertzian waves; only two limitations were to be made in this connection: first, the earth must not show any electrical resistance and, second, it must be smooth. Although these conditions are in reality only partly fulfilled, the waves of wireless telegraphy have since that time been identified with Hertzian waves; yes, the wireless waves are occasionally even confounded with light waves.

Marcini worked originally with the short Hertzian waves emitted by a Righi Oscillator. When he turned to the use of long waves, in accordance with Tesla's precedent, he could without hesitation describe his propagation processes as Hertzian waves, and only thereby had the correct raiment for

wireless telegraphy been found.

The description of Tesla's work contained in this volume might give numerous suggestions to everybody who looks beyond the far reaching every-day work of the electrical industry and has in view its general progress, and may it thereby serve not only for historical ~~expression~~ justice, but also for the further development of the electrical industry!

Berlin-Steglitz, March 5, 1932.

Franz Kiebitz.

P R E F A C E .

The last forty years in the field of electrical engineering have been given their imprint by the polyphase current system, polyphase power transmission and the induction motor. Countless long distance central stations have been erected during this time in the entire world, many millions of horsepower have up to now been developed from water-power, and the development in this direction is gaining ever more in immensity. The transmission of electrical energy to great distances has in a short time become a mighty factor in the economics of electricity as well as in modern engineering and present-day civilization. The foundation for this development was laid in the year 1882, a round fifty years ago, by Nikola Tesla, through his discovery of the rotating magnetic field. Based on this epochal discovery Tesla himself, by intense research work lasting for ten years, made numerous detail inventions and discoveries which, together with his discoveries in the field of high tension technique, were disclosed in more than forty patents and have created the foundation for the great edifice of the present heavy current industry.

Following up this work, Tesla developed in 1890 his high frequency generators, and in 1891 his high frequency transformers, from which he has created in the succeeding years the foundations for high frequency technique and high frequency investigation. His celebrated address in Columbia College before the American Institute of Electrical Engineers on May 20, 1891 was accompanied by scientific experiments

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UNDER LAWS OF

THE STATE OF
NEW YORK

CAPITAL STOCK, \$250,000

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This is to Certify that George F. Johnson is the
owner of one hundred shares of the Capital Stock of
Tesla Company Inc.
transferable only on the books of the Company by the holder hereof in person, or by
duly authorized attorney upon surrender of this Certificate properly endorsed.

Witness the seal of the Company and the signatures of its duly authorized officers,
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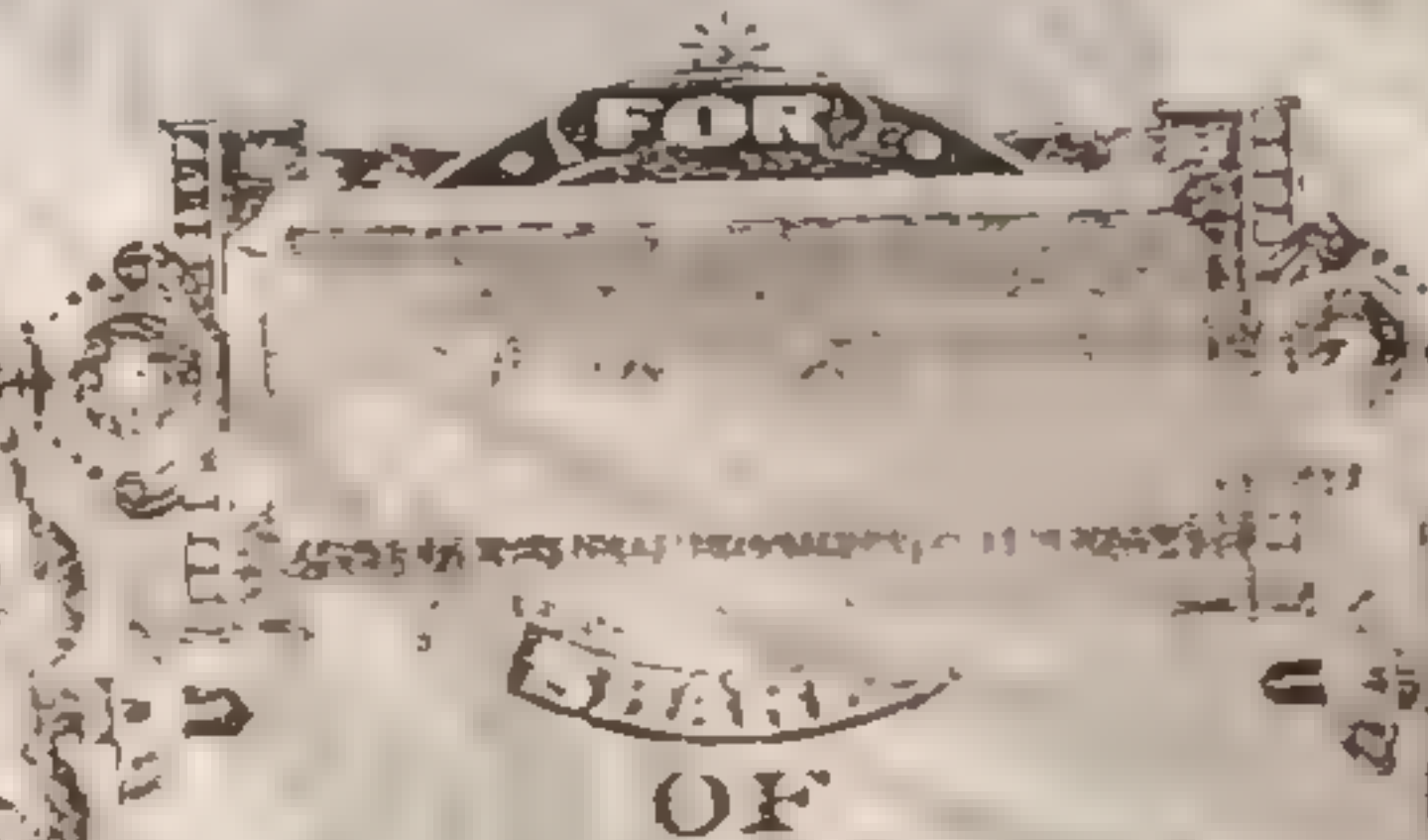
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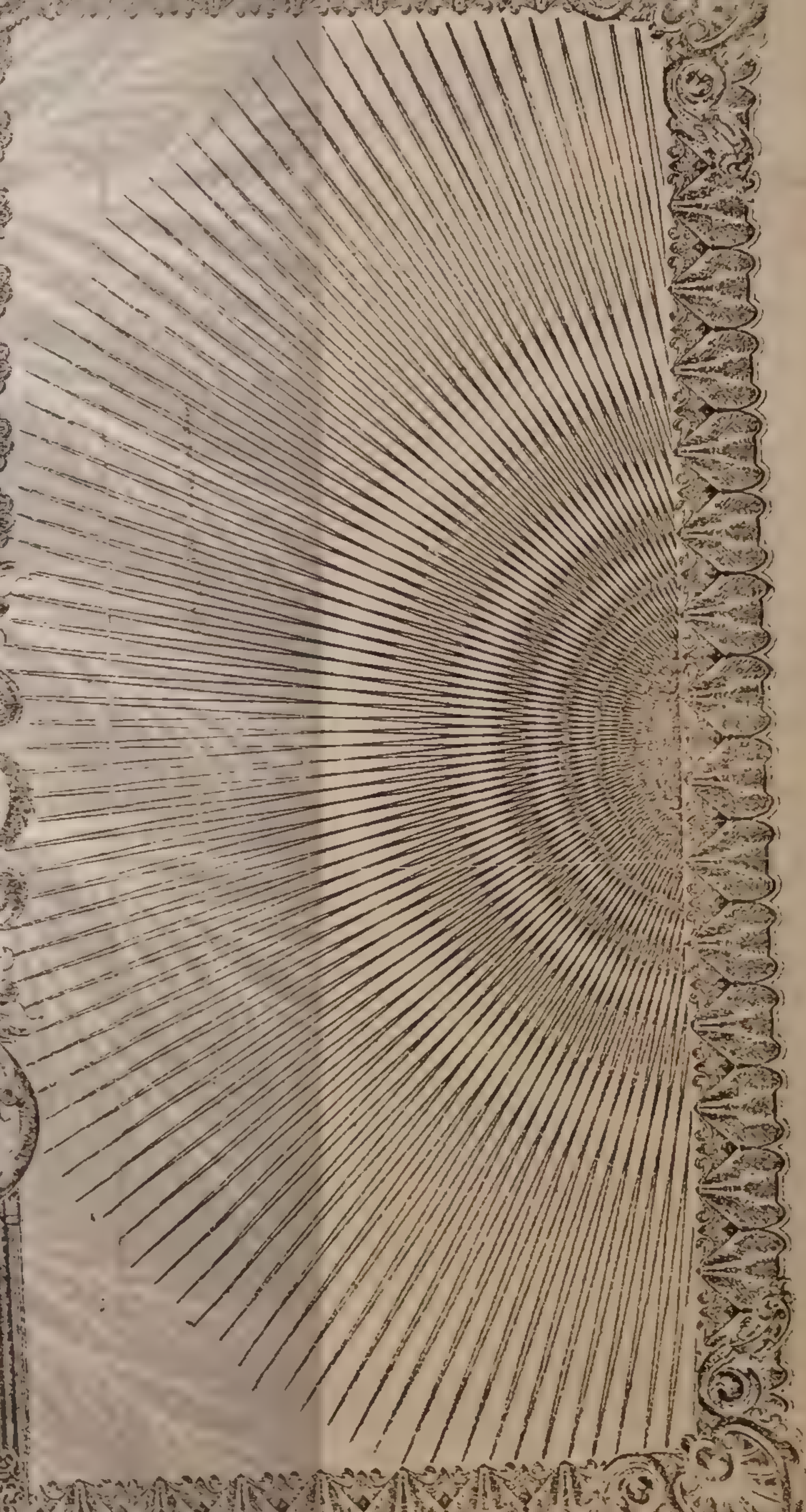
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Witness the Seal of the Company and the signatures of its duly authorized Officers affixed this 27th day of April 1905

Langdon Greenwood
Treasurer.

Wm Andrews
President.



My dear Mr. Einstein,

The most important discovery in the January 17, 1930
issue of the *Zeitschrift für Physik* is the discovery of the
relativistic Doppler effect.

1) The velocity which a planet rotating around
another star shows in falling towards the
star from infinity from infinity.
The orbital velocity multiplied
with the

2) The kinetic energy of a planet rotating of
a planet rotating around another star.
The kinetic energy of a planet rotating around another star
is the kinetic energy of a planet rotating around another star
The kinetic energy of a planet rotating around another star
is the kinetic energy of a planet rotating around another star

The kinetic energy of a planet rotating around another star
is the kinetic energy of a planet rotating around another star
The kinetic energy of a planet rotating around another star
is the kinetic energy of a planet rotating around another star

Please preserve this

Sincerely,
Albert Einstein

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New York, Apr. 19th, 1906.

Mr. Nicholas Tesla,
Waldorf Astoria, C I T Y.

Dear Sir:-

We have your favor of the 16th inst., which confirms telephone instructions to ship to you 2600 ft. of #8 B&SG. rubber insulated and lead covered cable.

Please note we are giving this order best attention in accordance with our quotation of April 16th.

Very respectfully,

FIW/H

STANDARD UNDERGROUND CABLE CO.

J. Marshall
NORTH

Tesla

ALTHOUGH the future to Mr. Einstein and others who open time, may be as clear as pi (the mathematical kind), it is to the rest of us, who are still on standard time, as foggy as a London alley. But it is certain that when the survivors of the present age of progress come to write the roster of our time, the name of Nikola Tesla will stand far up on the list. Tesla who predicted radio way back in 1900 now looks like sending waves to the moon. Tesla is the sort of scientist that Holmes and Mr. H. G. Wells love, a mysterious brilliant man who has left our science for fourth-dimensional play in gloomy testtube-festooned laboratories. Forty years ago Tesla was toying with electrical discharges of many millions of volts, while today scientists have difficulty in developing a fraction of those potentials for their atom-smashing and X-ray experiments. Long before Marconi, Tesla girdled the earth with giant electrical waves from his high frequency generators.

Tesla plans now to send a veritable Jovian bolt to our neighbor the moon, a beam capable of producing a large incandescent blemish on that pleasant night-time body. This bolt will carry energy waves capable of running machinery (lunar factory sites are going fast, so you'd better hurry). Although Tesla's new mechanism is a secret, it seems—from a little hint here and there—that the basic energy will be supplied by cosmic waves. Now!—if you haven't a shuddery plot doped out for a super-colossal piece featuring Boris Karloff, there's no use telling you any more.

—J. Wentworth Tilden.

Electric Sorcerer

PRODIGAL GENIUS The Life of
Nikola Tesla. By John O'Neill. 324
pp. New York: Grosvenor
\$3.75.

By WALDEMAR KAMPEFERT

NIKOLA TESLA stalks through Mr. O'Neill's pages, the fantastic figure that he was in life—a celibate recluse who sought supreme control over matter and energy, a Dr. Faustus who cared nothing for Marguerites, a philosopher filled with a vast discontent, a poet who toyed with artificial lightning. Though he was not of this world he was something of a bon vivant in his younger days. No one could order a dinner with nicer discrimination, no one had a finer taste in rare vintages. French, English, German, Italian and his native Serbian—he not only spoke them all but quoted their poetry to all who would listen. He lived in hotel rooms most of his life, a hermit in a metropolis, whose tall, lean figure could be seen on Fifth Avenue, sunk in his thoughts, unaware of the salutations of those who knew him, stopping only to feed the pigeons around the Public Library.

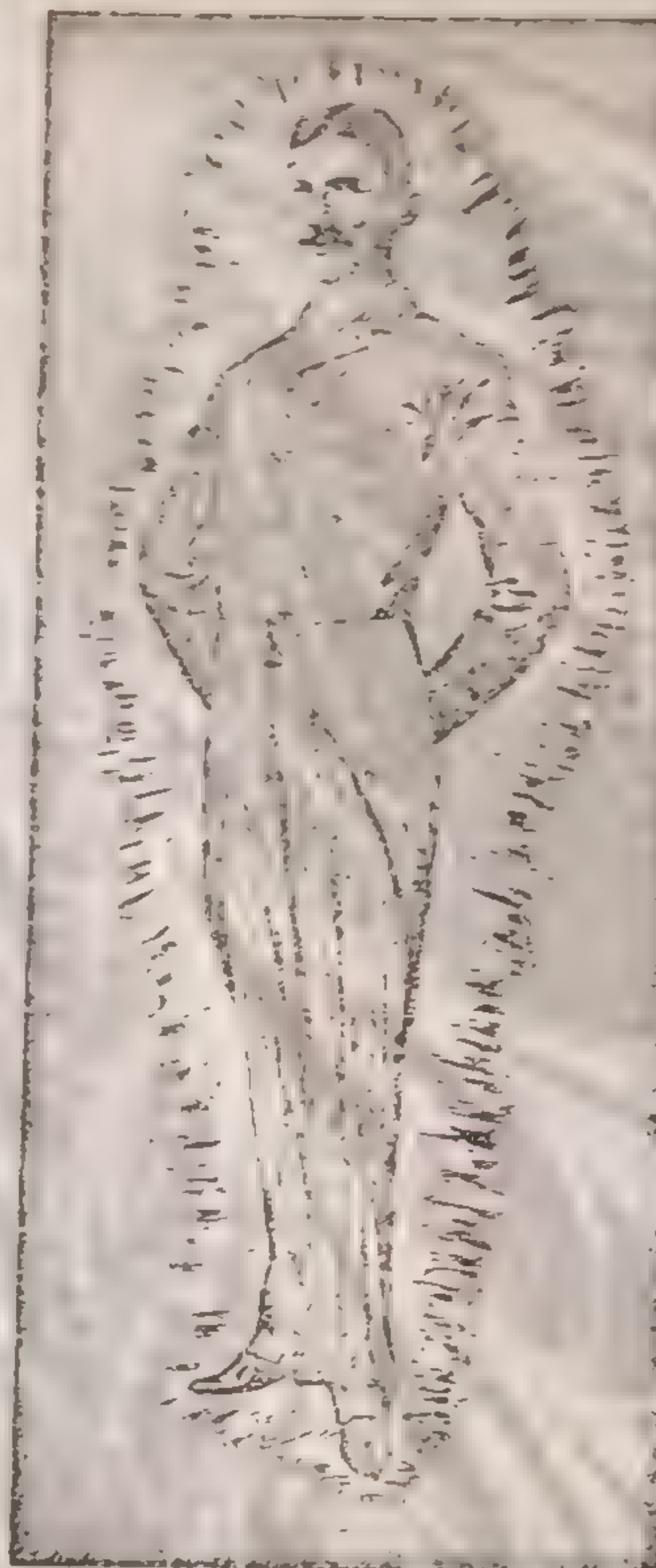
To Edison must go credit for having first built central stations, inventing electric lamps and putting us on our electrical feet. Yet not much of Edison's apparatus is left. What we see about us is largely Tesla's. The man was a pioneer who could make a fortune and spend it all on lavish experimenting and who died owing J. P. Morgan, John Jacob Astor, Austin Corbin and others several millions. All were so many rabbits in the intellectual clutch of this fascinating boa constrictor. Newspaper reporters, though they could not understand what he was talking about, were enthralled with his proposals to communicate with Mars and to transmit power without wires over vast distances. Tesla knew

how to get publicity, and he liked to pose as an electric sorcerer. He would discuss his projects with apparent reluctance and in the end, as if he were utterly exhausted but only having exhausted the topic, would ask for another drink, talk on billiards or quote Goethe.

LIKE a medieval practitioner of black arts, Tesla was given to mystification. He was the first to talk of "death rays." Once he set up oscillations that shook buildings near his laboratory and brought the police from headquarters. What happened is not clear, for Tesla destroyed the apparatus. The tale reminds one of his contemporary, Keeley, who was largely responsible for the popularly accepted notion that a man playing a violin can shake down a skyscraper. It may be, too, that the generators of the Colorado Springs Electric Company blew out when Tesla on Pike's Peak electrified himself and glowed weirdly. Engineers will wonder why effects that brought disaster to a power house two miles away without benefit of wires did not kill Tesla, and they will doubt if discharges of high voltage but very little amperage could do so much harm. It is not that we question Tesla but that we want more evidence than he ever supplied that an engineer can understand.

Here was a romanticist who should have been born in the Middle Ages. Electrical engineers never fully understood him. His mode of reasoning, his philosophic approach, were so much alien to them. Even in the one popular article that he wrote over forty years ago for the old Century Magazine he was vague as an oriental mystic.

Soon after he came to this country Tesla was associated briefly with Edison. No greater



Tesla "in the Effulgent Glory of Myriad Tongues of Electric Flames."

contrast can be imagined: Edison, as practical as an Irish foreman of a railway section gang, who affected to despise theorists and mathematicians, though he did not hesitate to employ them; the Serbian, a dreamer to whom most inventions were mere toys, his own included. No wonder the two parted.

Though he lived to be 85, Tesla crowded most of his inventive activity within twenty years. And what activity it was! Polyphase current engineering, the induction motor, the use of oil in transformers, radio, electric arcs fed by direct current in a magnetic field, gas-discharge lamps which were forerunners of Broad-

The Future of Flight

THE COMING AIR AGE. By Reginald M. Cleveland and Leslie E. Neville. New York: Whittlesey House. 359 pp. \$2.75.

By EDWARD WARNER

THERE has been a mighty flood of books on aviation in recent years—books on every aeronautical specialty from navigation to welding, including impassioned polemics on air power. Still it has been difficult to find a single volume that could be recommended to the intelligent voter who sought a comprehensive view, and not an unduly romantic or impressionistic one, of how flight might affect human behavior and the world's economy in years to come.

It is for that voter, rather than for avid youth straining for its own wings, that "The Coming Air Age" is written. The authors have chosen a little-used target; and if they have not quite hit the bullseye, they have come close. Both are well known and long respected counselors to the aircraft industry—Mr. Cleveland who was formerly aeronautical editor of THE NEW YORK TIMES, Mr. Neville as editor of Aviation Magazine.

They have been most successful where they have been most specific. The continuity of the volume is scanty, for a variety of subjects is treated; successive chapters deal with matters ranging from the economics of private flying to the possible functioning of a world police force. All lie within the province of the title of the book; and some, at least, are the best concise treatments of their subjects that are so far available to the general reader. The chapters which will arouse the quickest interest, those dealing with air transportation, are at once optimistic and sober. The technical problems are analyzed in simple terms together with the possibilities of

Only in the chapters on air-age education and on aerial policing do the authors' convictions appear to play the leading part. On education, in particular, they write as passionate advocates of a realignment of the whole educational system around aeronautical requirements, interests and incentives. "The Coming Air Age" finds in aviation a new, dominant influence—not only in physics and chemistry, to which "belongs the heavy responsibility of teaching why the basic rules of safe flying must be observed," but in English, where "the school children of the air age . . . will have new reasons [aeronautical ones] for wanting to be literate"; and in history, where "it is not going to be easy to teach them [young people] the proper historical perspective . . . when their own inclination on the matter is to date human progress from the Wright brothers—an inclination to which most of their other subjects can cater gladly."

All this may exaggerate the violence of the break with the past. A country with 30,000,000 automobiles, and millions of trained machine operatives, has not had to await the airplane to find evidence of the universal influence of new applications of physical science to technology; but such whole-hearted advocacy of such far-reaching proposals, supported by so many detailed illustrations, deserves respectful reflection even by those who will be quick to object to its underlying assumptions.

CONCERNING the use of air power in the preservation of peace, Messrs. Neville and Cleveland show a laudable readiness to go beyond the generalizations with which that subject is too often disposed of, and to come to grips with the question of how

Also in NYPL
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inventing electric lamps and putting us on our electrical feet. Yet not much of Edison's apparatus is left. What we see about us is largely Tesla's. The man was a pioneer who could make a fortune and spend it all on lavish experimenting and who died owing J. P. Morgan, John Jacob Astor, Austin Corbin and others several millions. All were so many rabbits in the intellectual clutch of this fascinating boar constrictor. Newspaper reporters, though they could not understand what he was talking about, were enthralled with his proposals to communicate with Mars and to transmit power without wires over vast distances. Tesla knew

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contrast can be imagined: Edison, as practical as an Irish foreman of a railway section gang, who affected to despise theorists and mathematicians, though he did not hesitate to employ them; the Serbian, a dreamer to whom most inventions were mere toys, his own included. No wonder the two parted.

Though he lived to be 85, Tesla crowded most of his inventive activity within twenty years. And what activity it was! Polyphase current engineering, the induction motor, the use of oil in transformers, radio, electric arcs fed by direct current in a magnetic field, gas-discharge lamps which were forerunners of Broadway's neon lights, the medical application of high-frequency currents—the record speaks for itself.

AS a practiced popularizer of science, Mr. O'Neill, who is the science editor of The New York Herald Tribune, vividly and skillfully tells the story of this extraordinary personality. His interest in his subject is more than that of the ordinary biographer. He wrote poems to Tesla as a boy, and when he made his acquaintance he sat enthralled at his feet. This biography has therefore much of O'Neill in it, which is one of its chief charms.

Because of this hero-worshipping attitude O'Neill gives Tesla far more than is his due. Tesla's great contribution to electrical engineering was his invention of alternating current machinery. Though O'Neill examines the claims of those who are regarded at least as independent inventors of this same machinery, especially the claims of Prof. Galileo Ferraris, he seems to this reviewer much too enthusiastic in Tesla's behalf. Nothing is said of S. Z. Ferranti, who in his way was just as remarkable as Tesla and who

where they have been most specific. The continuity of the volume is scanty, for a variety of subjects is treated; successive chapters deal with matters ranging from the "economics of private flying to the possible functioning of a world police force. All lie within the province of the title of the book; and some, at least, are the best concise treatments of their subjects that are so far available to the general reader. The chapters which will arouse the quickest interest, those dealing with air transportation, are at once optimistic and sober. The technical problems are analyzed in simple terms together with the possibilities of solution.

THOSE who let their hopes of air cargo run away with them—not so numerous now as in the vast air-cargo excitement of two years ago—are deflated by a reminder that to move all the existing railway freight traffic in the United States by air would require a volume of gasoline equal to the world's total production of petroleum products. At the same time, the prospects of radical improvement in economy, both in fuel cost and in other costs, are recognized and discussed.

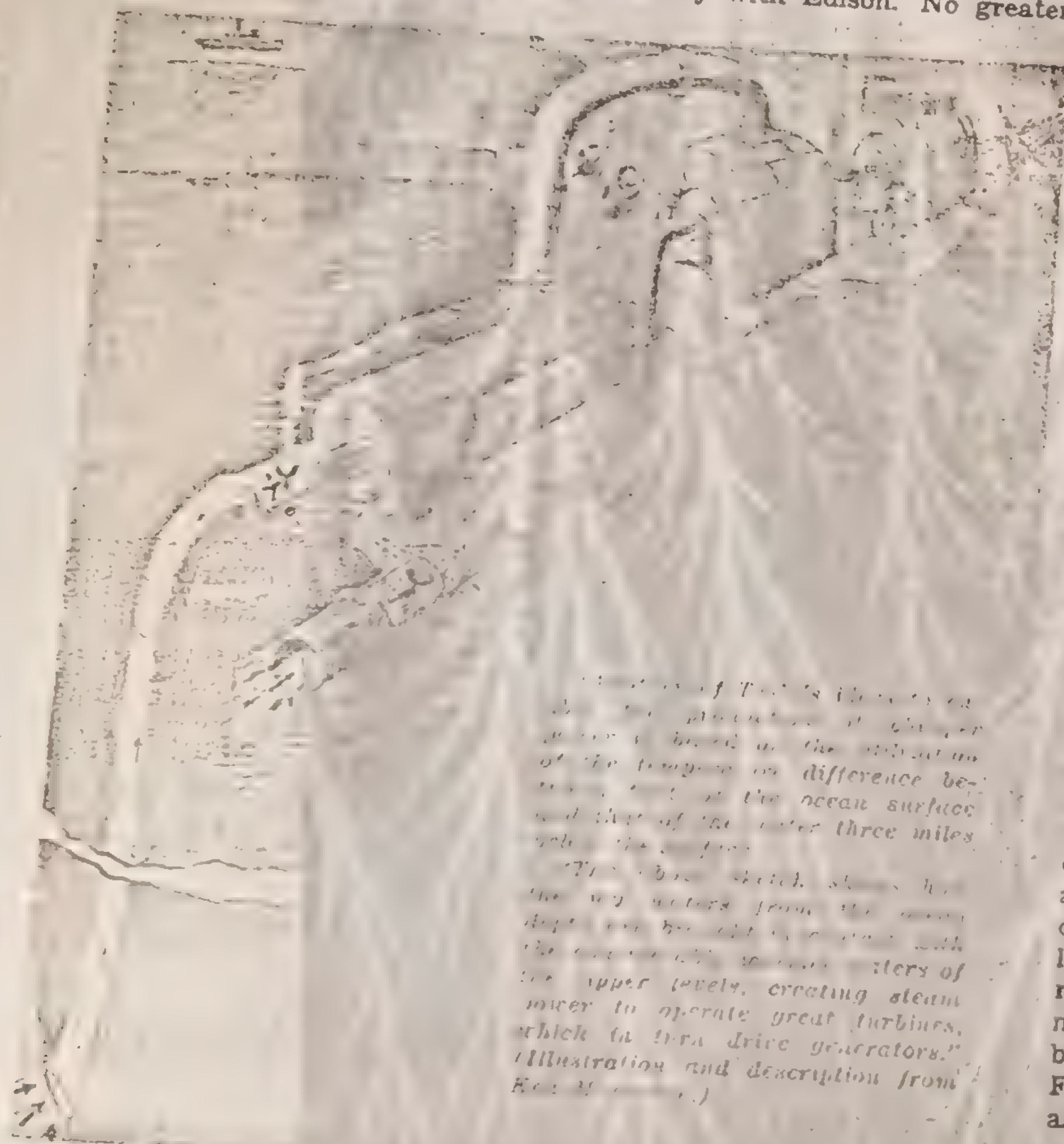
Highly successful, although somewhat more detailed than many lay readers will wish, is the chapter on air traffic control. The dependence of any large increase in air transportation upon the development of improved methods of handling the traffic without serious risk of collision is very properly emphasized. Some of the specific possibilities of improvement are described.

The general approach is descriptive, with extended quotations from various authorities.

find evidence of the universal influence of new applications of physical science to technology; but such whole-hearted advocacy of such far-reaching proposals, supported by so many detailed illustrations, deserves respectful reflection even by those who will be quick to object to its underlying assumptions.

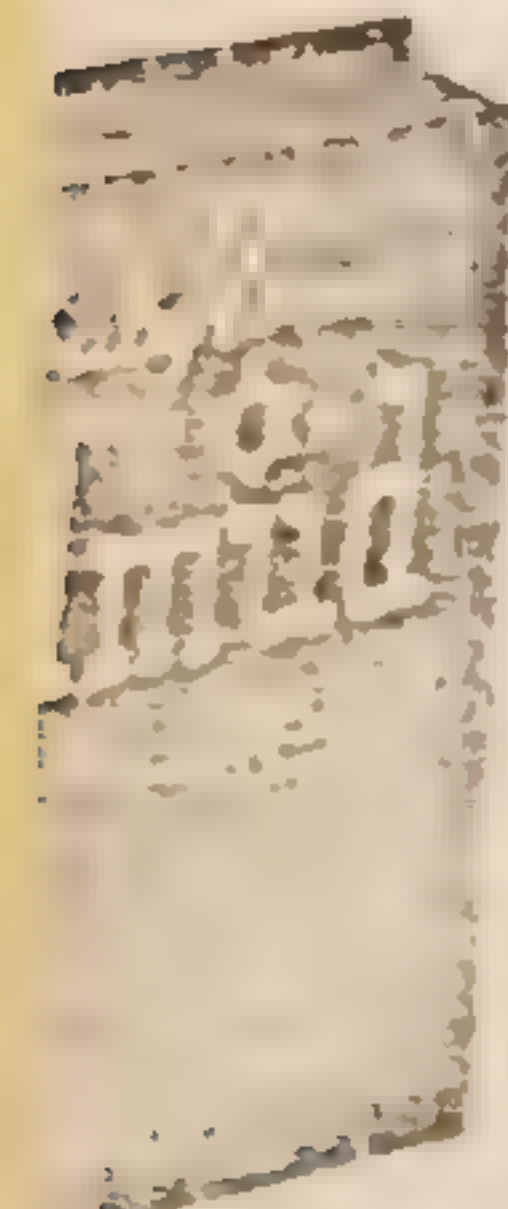
CONCERNING the use of air power in the preservation of peace, Messrs. Neville and Cleveland show a laudable readiness to go beyond the generalizations with which that subject is too often disposed of, and to come to grips with the question of how the "police force" would actually be used to meet specific emergencies. They accept it as probable that such a force will be created; they report the astonishingly exact conclusion that "the United States will be expected to contribute * * * 20,500 aircraft valued at \$2,785,400,000"; but they are not optimistic about the outcome. Weighing the pros and cons of such an organization in the scales of a common-sense historical memory, they see as all too easy the crumbling of the framework by the withdrawal of one or another of the great powers, for reasons of economy or mutual suspicion.

The portions of the book I have described fill the last three-quarters of its pages. The opening section is devoted to geography, with emphasis on the sphericity of the earth and the possibility of drawing misleading conclusions from maps based on the Mercator projection—issues which have been so heavily exploited in recent months as to have lost some of their freshness—and to a rather general discussion of some of the political problems of international air transport.



(Continued on Page 22)

THE Babylonian MUD



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from the
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Hebrew
by

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of the Sages

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AGAINST THE CURRENT. The Life
of Karl Heinzen. By Carl Wittke.
Chicago: University of Chicago
Press. 328 pp. \$3.75.

By GEORGE N. SHUSTER

AMERICA is, in part, the
handiwork of exiles. Nearly
a hundred years ago, after the
abortive revolution of 1848, the
first wave of political refugees
from Germany passed through
the formidable bottleneck of
Castle Garden. Many of them
were lovers of freedom, and some
served the major causes of the
time, particularly the Abolition-
ist movement. Perhaps the most
individualistic among them was
Karl Heinzen, for many years
editor of the vitriolic but uncom-
promisingly humanitarian Pio-
nier, memorable as one of the
landmarks of "radical" journal-
ism. Dean Wittke's biography of
this strange and able man is a
distinguished book, being scholar-
ly and objective as well as hu-
man and quite urbane.

Born in Duesseldorf while Na-
poleon was lord and master of
the Rhineland, Heinzen's mind
was fired by the ideals of the
French Revolution. He grew up
to be a most tempestuous re-
former, contemptuous on the one
hand of the religious and social
conventions to which his family
subscribed and vehemently hos-
tile on the other hand to the so-
cialistic Utopia advocated by
Marx and Lasalle. He held that
reason could solve life's problems
if only humanity gave it a
chance. The Germany he loved
must therefore clear the way for
the social application of reason
by becoming a republic of free
men. Naturally, it was often dif-
ficult to determine what "reason"
suggested in a given practical in-
stance. Heinzen quarreled with
his fellow-revolutionists of 1848,
finding for each of them an en-
less variety of picturesque names.

tirely dedicated to lost causes and
forlorn hopes is shown by the fact
that Heinzen championed equal
rights for women and for Ne-
groes. He was, of course, also a
resolute foe of slavery. Since he
was a very well educated man,
his views on the subject of scho-
lastic training are still worth
reading, even though he was far
more Rousseauistic than Rous-
seau. His standards of morality
were exceedingly high, divorced
though they were from religious
belief and based upon a system
of thought which he termed "ma-
terialism." On the other hand,
he was the sort of radical who
vehemently insisted upon govern-
mental action for things he be-
lieved desirable, but resisted with
equal force all encroachments
into spheres he defined as per-
sonal. Thus he advocated a
policy of punishment toward the
defeated South, but held that no
child ought to be compelled to go
to school. He demanded that the
State suppress the churches, but
advocated the public support of
temples in which the gospel ac-
cording to Heinzen should be
preached. Other immigrant
groups he was likely to refer to
with scornful contempt, while
holding that the right sort of
German was a precious Ameri-
can asset.

Possibly it is Heinzen's atti-
tude toward his native Germany
which is now of the greatest in-
terest. Until well past 1870 he
hoped that the republic of which
he had dreamed would be erected
and would embrace all the Ger-
man lands, including Austria. But
when his erstwhile countrymen
turned stuffy braggarts after the
defeat of France in 1870 and

docilely placed the Hohenzollerns
on the imperial throne, he fought
back with pamphlets, some of
which advocated tyrannicide.
Slowly he was compelled to admit
that what he had hoped for
would never come to pass. He
wrote that German chauvinism
was more detestable than the
French variety, "because it is fed
by servility and insolence." Though his language was usually
bizarre and extreme, much that
he had to say was prophetic.

Dean Wittke says quite mod-
estly that Heinzen deserves a
biography if only because he is
the evidence that "once there was
a strong, liberal, cosmopolitan
group in the German states which

is the absolute antithesis of pres-
ent-day nazism." The reader will
agree that the debt has here been
paid in worthy fashion. Yet the
suspicion will not vanish that one
reason why the "liberal, cosmo-
politan" German group did not
succeed must be found in its tur-
bulent, cantankerous individual-
ism—a trait which was, alas!
quite as marked in the era imme-
diately preceding Hitler as it was,
apparently, in 1848. Heinzen's
Communist friends referred to
him as a "bourgeois democrat." He
retaliated in kind. Just that
sort of debate was in progress
prior to 1932, and one can only
suppose that it will be resumed
anew as soon as peace returns.

Nikola Tesla, Electric Sorcerer

(Continued from Page 6)

certainly built in London the first
commercial alternating current
station.

O'Neill believes so devoutly in
Tesla that he regards him as the
father of electrotherapeutics,
though D'Arsonval deserves fully
as much if not more credit for
the use of high-frequency cur-
rents in medical practice. There
is no doubt about Tesla's origi-
nality or about the grand way in
which he thought and acted, but
the phenomenon of simultaneous
and independent invention is so
well known that no physicist,
however accomplished, ever
stands alone.

Despite his extraordinary im-
agination, his profound knowl-
edge of science and his rare gifts,
Tesla remained a Victorian. When
the atomic physicist gave us the
electronic theory of matter and
Einstein relativity Tesla would

have none of them. He wanted
his infinite universe, his Euclid-
ean space, an ether which had
become preposterous even when
he was still in his prime. He
died, lonely and misunderstood,
leaving much of immense, prac-
tical importance but far more
which is no clearer to us than the
boasts of Paracelsus or the mys-
tical forebodings of a Nostrada-
mus.

O'Neill's book is the one full-
length biography and the one ap-
preciation of Tesla that we have.
An immense amount of work has
gone into its production. It does
honor both to Tesla and its au-
thor, and it ought to be read by
anyone who takes the slightest
interest in this highly electrified
world of ours. As for those nov-
elists who still believe that a
scientist is a wizard of the Mer-
lin type, they will find O'Neill's
Tesla made to order.

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2,000 ARE PRESENT AT TESLA FUNERAL

Cathedral of St. John the Divine
Is Scene of Yugoslav State
Function for Scientist

GREAT IN SCIENCE ATTEND

Ambassador Fotitch Heads the
Procession of Mourners—
Bishop Manning Assists

Inventors, Nobel Prize winners, leaders in the electrical arts, high officials of the Yugoslav Government and of New York, and men and women who attained distinction in many other fields paid tribute yesterday to Nikola Tesla, father of radio and of modern electrical generation and transmission systems, at an impressive funeral service in the Cathedral of St. John the Divine.

The service, conducted in Serbian by prominent priests of the Serbian Orthodox Church, was opened and closed by Bishop William T. Manning, assisted by Father Edward West, Sacrist of the Cathedral. The Serbian Orthodox Office for the Dead was said by the Very Rev. Dushan Shoukletovich, rector of the Serb Orthodox Church of St. Sava, who officiated in the name of the Serbian Orthodox Church in America.

City Is Represented

More than 2,000 persons attended the service. The city was represented by Newbold Morris, President of the City Council, who headed the list of honorary pallbearers. Other honorary pallbearers included Dr. Ernest F. W. Alexanderson of the General Electric Company, inventor of the Alexanderson alternator; Professor Edwin H. Armstrong of Columbia University, inventor of frequency modulation and many other important radio devices; Dr. Harvey C. Rentschler, director of the research laboratories, Westinghouse Electric and Manufacturing Company; Gano Dunn, president of the J. G. White Engineering Corporation; Colonel Henry Breckenridge, Dr. Branko Cubrilovich, Yugoslav Minister of Agriculture and Supply; Consul General D. M. Stanoyevitch of Yugoslavia and Professor William H. Barton, curator, Hayden Planetarium.

Fotitch Heads Procession

The funeral service was held as an official State function of the Yugoslav Government, which was officially represented by Constan-

tine Fotitch, Yugoslav Ambassador to the United States. Dr. Fotitch led the procession of mourners who passed the coffin before it was closed. Oscar Gavrilovitch, Yugoslav consul in New York, headed the list of ushers.

Many telegrams were received from officials of the United States Government, prominent scientists, literary men and many others. These included messages from Mrs. Roosevelt, on behalf of herself and the President; Vice President Henry A. Wallace, Professors Robert A. Millikan, Arthur H. Compton and James Franck, all Nobel Prize winners in physics; Professor William Lyon Phelps of Yale, Jean Piccard and Major Gen. J. O. Mauborgne, U.S.A., retired.

Mrs. Roosevelt's message read: "The President and I are deeply sorry to hear of the death of Mr. Nikola Tesla. We are grateful for his contribution to science and industry and to this country."

Vice President Wallace's message read as follows:

"Nikola Tesla, Yugoslav born, so lived his life as to make it an outstanding sample of that power which makes the United States not merely an English-speaking nation but a nation with universal appeal. In Nikola Tesla's death the common man loses one of his best friends."

Scientists Pay Tribute

Drs. Millikan, Compton, and Franck paid tribute to Tesla as one of the world's outstanding intellects, who paved the way for many of the important technological developments in modern times.

Among the many floral offerings was a wreath from King Peter II of Yugoslavia; the Royal Yugoslav Government, Ambassador Fotitch and many Yugoslav societies.

Chief mourner was Sava Kosanovich, nephew of Dr. Tesla and president of the Eastern and Central European Planning Board, representing Yugoslavia, Czechoslovakia, Poland and Greece.

The body was taken to Ferncliffe Cemetery, Ardsley, N. Y., where it will be in the receiving vault until plans are completed.

CAPT. EDWARD B. WINN

SAN JUAN, Puerto Rico, Jan. 12 (AP)—Captain Edward B. Winn, United States Army Finance Officer at the San Juan departmental headquarters, died yesterday at the age of 52.

Other obituaries on preceding page.

Berlitz
NEW CLASSES TODAY

FRENCH — Wednesday, 6 to 8 p. m.
SPANISH — Wednesday, 7 to 9 p. m.
ITALIAN — Wed. & Fri., 8 p. m.

BERLITZ 630 Fifth Ave. CL. 6-1416
SCHOOL OF LANGUAGES

Rockefeller Center (at 50th St.)
Same classes in Brooklyn, 66 Court St.

EDGAR PALMER

NIKOLA TESLA RITES TO BE HELD TUESDAY

Yugoslav Government-in-Exile Plans Official State Funeral

Nikola Tesla, father of radio and of the modern electrical transmission systems, who died Thursday night at the Hotel New Yorker at the age of 86, will receive an official state funeral under the auspices of the Yugoslav Government-in-Exile, it was announced last night by the Yugoslav Information Center.

The service will be held in the Cathedral of St. John the Divine on Tuesday at 4 P. M. Meanwhile the body will lie in state at the Campbell Funeral Church, Madison Avenue and Eighty-first Street.

Yugoslavia, where Dr. Tesla was born of Serbian parents, will be officially represented by Ambassador Constantin Fotitch and many present and former high officials of that country. Among them will be Dr. Ivan Shubashich, Governor of Croatia; Dr. Bogoljub Jevtich, former Prime Minister of Yugoslavia; Branko Chubrilovich, Yugoslav Minister of Food Supply and Reconstruction; Franc Snaj, Minister of State representing the Slovenes, and Dr. Tesla's nephew, Sava Kosanovitch, president of the Eastern and Central European Planning Board, representing the Yugoslav, Czechoslovak, Polish and Greek Governments.

Held Patents on Transformers

Dr. Tesla, who held more than 700 basic patents, is regarded as the man who laid the foundations for modern radio broadcasting and television; for the giant electrical transformers and other transmission apparatus, and for the basic apparatus that makes possible neon lights and fluorescent illumination.

To the end of his days Dr. Tesla claimed that the Marconi system of wireless telegraphy was an infringement on his method and apparatus for transmitting energy without wires. Dr. Tesla brought suit against Marconi in an effort to gain legal recognition of his claim. He blamed his failure to establish his patent rights to the paucity of technical knowledge at that time on the difference between microwaves and short waves. When the distinction finally became clear the original Tesla patents had run out.

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Nikola Tesla Dies At 85 Alone in His Hotel Suite

**Celebrated Inventor,
Born in Yugoslavia,
An Electrical Wizard**

Nikola Tesla, 85, inventor of the Tesla coil, the induction motor and hundreds of other electrical devices, died last night in his suite at the Hotel New Yorker. According to hotel officials, he had been in failing health for two years.

The world-famous inventor, who died alone, was found dead in bed by a maid. She called a hotel physician.

The hotel management started a search for friends or relatives. It was believed a nephew is living in the city but his whereabouts are not known.

Nikola Tesla was born in Smiljan, Yugoslavia, in July, 1859. His father, a Greek Orthodox Church minister, was a noted writer, orator, linguist and mathematician. His mother, Georgina Mandic, was an inventor.

Came Here in 1894.

Tesla studied at Gratz Polytechnic Institute and the University of Prague after preparatory work at the Realschules of Lika and Carlstadt. He came to the United States in 1894, and became a naturalized citizen.

In 1886 he designed the arc-lighting system. Two years later he invented the Tesla motor and designed a plan for the transmission of alternating current. The following year he presented plans for electrical conversion and distribution by oscillatory discharges.

His high frequency studies and development of the transforming coil bearing his name occurred from 1890 to 1891. From then up to 1900 his discoveries and inventions included such fields and appliances as wireless communication, electrical oscillation, radiant power and radioactive matter.

Communications and wireless power transmission occupied most of his research after that. He worked at the laboratories of Thomas Edison at Orange, N. J., specializing in motor design.

Fed Crumbs to Pigeons.

During recent years Mr. Tesla had been seen, but seldom recognized, on the steps of St. Patrick's Cathedral, in front of the Public Library and in Greeley Sq., invariably carrying a bag of crumbs which he fed to the pigeons.

Mr. Tesla's only military invention was a method to which he once alluded but never fully described. It was a means whereby an impenetrable "wall of force" could be reected about a nation's borders which would render helpless any military attack. He disclosed existence of the plan in 1934, and said he intended to present it to the Geneva Conference. He seldom referred to it afterward.

In 1936, when he was 80, he said his original plan to live to be 135 had been changed with the repeal of prohibition, and he would live to be 150 instead.

He was decorated by the Yugoslav and Czech governments. He wept when he met King Peter of Yugoslavia here last July.

NIKOLA TESLA, 86, PROLIFIC INVENTOR

Alternating Power Current's
Discoverer Dies in His
Hotel Suite Here

HIS 'DEATH BEAM' CLAIM

He Insisted the Invention
Could Annihilate an Army
of 1,000,000 at Once

Nikola Tesla, electrical inventor, died last night in his suite at the Hotel New Yorker.

According to the hotel staff, the electrical engineer and designer, who was 86 years old, had been in failing health for two years. Of vigorous temperament and with emphatic ideas on personal health as well as engineering, he had few visitors, according to the hotel management, which reported that his meals, strictly vegetarian-style, were especially prepared for him by the chef.

"He made everybody keep at a distance greater than three feet," a hotel executive recalled.

A spokesman for the hotel said that Dr. Tesla died as he had spent the last years of his life—alone. He was found dead in bed by a floor maid at 10:45 P. M. She called a house physician, who pronounced him dead.

The New Yorker management was attempting last night to locate friends of the inventor. It was believed he had a nephew living in London.

His death was toward the end of a life that bordered in the fantastic as he admitted. On his seventy-fifth birthday he announced in an interview that he had invented a powerful enough to destroy airplanes at a distance of 100 miles and annihilate 1,000,000 soldiers instantly.

On his seventy-seventh birthday he announced a specific invention that he expected to live in the world before the end of the century. He said that of two great inventions he had announced, he expected the 100,000 horsepower engine to be the one that would revolutionize the world. The engine was sensational, but it was not important. It will be the death which Joshua's sword had used to break down the walls of Jericho.

Since he made his first practical invention—a telephone repeater—in 1891, while living in Budapest, Mr. Tesla claimed to have made about 700. Many of them were of great importance, but these were nearly all invented in the last twenty years of the past century.

Not Practical in Business. Tesla was handicapped by the fact that he was anything but a businessman as far as concerned. It was a constant victim of his own ideas and he had a place to go to where he could work out his experiments in hotel rooms.

He probably could have become a man had he chosen to be a part of a large industrial organization.

His story to work out his experiments in hotel rooms.

Of his inventions the most important was the alternating current system of power.

charges was devised the following year, and in 1891 the now famous Tesla coil, or transformer, was invented.

Mr. Tesla devised a system of wireless transmission of intelligence in 1893, and this was followed by mechanical oscillators and generators of electrical oscillations.

From 1896 to 1898 Tesla made researches and discoveries in radio waves, material streams and emanations.

Mr. Tesla received the Elliot Cresson gold medal in 1893 in recognition of his original work first presented before the Franklin Institute and the National Electric Light Association.

In November, 1931, he published designs of two power plants, one to utilize the heat below the surface of the earth, the other to take advantage of the difference between the upper and lower levels of the ocean.

Preferred Ship to Society. Say of manner and attitude in Tesla. Mr. Tesla preferred workshop to society. He was married. He was a drinker neither because he considered those things to be his other hand, he was a moderate drinker. He lived until death.

At one time Tesla had the financial backing of J. Pierpont Morgan. He built a tall tower on Long Island, but when his wireless system was abandoned, the tower was dismantled. Mr. Tesla owned a bungalow on Houston Street, New York, but it burned down and he had another one built.

Ex-Officer of the Navy. Captain Kroef first knew the state of war existed between the Netherlands and Japan.

MEELI (Netherlands) Captain modor.

lands Stern. Packet Company Eastern shipping line, who turned to Melbourne recently.

his release from a Japanese internment camp, died yesterday heart attack.

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NIKOLA TESLA
The New York Times, 1926

Articles - 11

NIKOLA TESLA, 86, PROLIFIC INVENTOR

Alternating Power Current's
Discoverer Dies in His
Hotel Suite Here

HIS 'DEATH BEAM' CLAIM

He Insisted the Invention
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The New Yorker management was attempting last night to locate friends of the inventor. It was believed he had a nephew living in this city.

Idea Fantastic Toward End

Nikola Tesla's ideas bordered increasingly on the fantastic as he advanced in years. On his seventy-ninth birthday he announced in an interview that he had invented a "death beam" powerful enough to destroy 10,000 airplanes at a distance of 250 miles and annihilate an army of 1,000,000 soldiers instantaneously.

In his seventy-seventh birthday interview he had no specific invention, but said he expected to live "beyond 140." The year before, however, he spoke of two great discoveries.

"They are announced," he said, "they will be like the 100,000 of the Apocalypse. The first will be less sensational, but it, too, will be important. It will be like the shout with which Joshua's army brought down the walls of Jericho."

Since he made his first practical telephone repeater—in 1891—he had been busy with his inventions. He had twenty patents in the United States and more than a hundred in other countries.

Not Practical in Business

He was not a practical businessman. He was not a man of affairs. He was a man of ideas. He was a man of vision. He was a man of genius.

He could have become a very rich man. He was chosen to be a partner in a large industrial company. He preferred poverty to the life of a millionaire. He was not a man of affairs. He was a man of ideas. He was a man of vision. He was a man of genius.

Of his inventions the most important was his system of alternating current power transmission.

NIKOLA TESLA

The New York Times, 1926

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Mr. Tesla devised a system of wireless transmission of intelligence in 1893, and this was followed by mechanical oscillators and generators of electrical oscillations.

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In November, 1931, he published designs of two power plants, one to utilize the heat below the surface of the earth, the other to take advantage of the difference between the upper and lower levels of the ocean.

Preferred Shop to Society

Shy of manner and ascetic in tastes, Mr. Tesla preferred a workshop to society. He was married. He was a man of many interests. He was a man of many talents. He was a man of many achievements.

At one time Tesla had the official backing of J. Pierpont Morgan. He built a tall tower on Long Island to send wireless power, but when his father died no more money was coming and the plan had to be abandoned.

Mr. Tesla once owned a house on Houston Street, New York, but it burned down and he had another one built.

CAPTAIN A. C. KROE

Ex-Officer of the Netherlands

—Was in Japan

MEMBER OF THE

(Netherlands)

Captain

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but a practical man as far as business was concerned. It was said that he was frequently victimized, but he did not seem to worry much as long as he had a place to work.

Tesla probably could have become a rich man had he chosen to become an employe of a large industrial concern, but he preferred poverty and freedom. Early in 1887 he had formed the Tesla Electric Company of New York, but the concern was not a financial success. For many years he did not even have a laboratory to work in, conducting his experiments in hotel rooms.

Of his inventions the most important were his systems of alternating current power transmission and distribution of electrical energy. His system of electrical conversion and distribution by oscillatory discharges was highly significant, as were his researches and discoveries in radiations, material streams and emanations.

After his discovery of a system of transmission of power without wires and a high-potential magnifying transmitter, Tesla had been chiefly engaged—since 1903—in the development of a system of telegraphy and telephony, and designing a plant for the transmission of power without wires, to be erected at Niagara.

As early as 1903 Tesla made it known that he was experimenting with interplanetary communication. He firmly believed that most of the planets are inhabited and that messages could be sent between the earth and Mars, Jupiter, Venus, &c.

He also had visions of harnessing the sun's rays and of utilizing the energy of the sea.

Son of Greek Clergyman.

Nikola Tesla was born at Smiljan, Lika, a border country of Austria-Hungary, on July 10, 1856. His father was a Greek clergyman and orator, and his mother, Georgina Mandic, was an inventor.

His education began with one year in elementary school and then four years of the lower Realschule at Gospie, Lika. Then he went to a higher school at Carlstadt, Croatia, being graduated in 1873. He studied for four years at the Polytechnic School at Graz, devoting most of his time to mathematics, physics and mechanics, and then had two years at the University of Prague, where he studied philosophy.

In 1881 he went to Paris, where he worked as an electrical engineer, and the following year he went to Strassbourg, where he installed a mechanical plant. He was attracted to America by the remarkable progress in electrical energy, and came to this country in 1884.

For some time he worked with Thomas A. Edison at Orange, N. J., chiefly designing motors and generators. In a short while a proposal was made to him to start his own company. He accepted the terms and began by working up a practical system of arc lighting, as well as a potential method of dynamo regulation, which became known as the "third-brush regulation."

Invented Coil in 1891.

He also devised a thermomagnetic motor and other kindred devices. Soon after the Tesla Electric Company had been formed Mr. Tesla

produced his epoch-making motors for alternating current, in which, going back to earlier ideas, he evolved machines having neither commutator nor brushes. This important invention came in 1888. His system of electrical conversion and transmission by oscillatory dis-

Eastern shipping line who turned to Melbourne recently on his release from a Japanese internment camp, died yesterday of heart attack.

Captain Kroef first knew of state of war existed between Japan and the Netherlands when his was seized and he and his officers were jailed in Yokohama. After twenty-one days of life under "filthy conditions," he transferred to an internment camp where conditions were "somewhat better."

He served with K. P. M. thirty-three years, twenty-five of which were spent on the Singaia Netherlands East Indies-Australia run. Captain Kroef was in retirement in Sydney when the European war broke out, and re-entrained maritime service after the invitation of the Netherlands in 1910. His son, Jan, is serving with the Netherlands Navy.

MOHAMMED HASSAN

Persian Prince of Former R House Dies in Exile at 4

Special Cable to THE NEW YORK TIMES LONDON, Jan. 8.—Prince Mohammed Hassan of Persia, brother of the former Shah, Sultan Abolmehdi, and member of the Kadjar dynasty, collapsed in the street at Madrid today, dying while taken to a hospital. His age was

The Prince, who proclaimed himself right to the throne in 1920, was in Persia after the Riza Khan of 1921 and had lived in London ever since. Surviving are two sons, one of whom is in the British

Sultan Ahmed, the last of Kadjar dynasty, which had since been in exile for five years. His death had been an expectation since the revolution in Persia. Riza Khan seized the throne.

ERNEST J. HOWE

Special to THE NEW YORK TIMES Poughkeepsie, N. Y., Jan. 7.—Ernest J. Howe, an assistant civil engineer of the New York State Department of Public Works, assigned to the Poughkeepsie office, died today in the Veterans Hospital here at the age of 66.

Mr. Howe, who was born in Canton, Mass., and was graduated from the University of Maine, was a former chief engineer of Taconic State Park Commission. He entered the employ of the New York State Department of Engineers in 1903.

He leaves a widow, Mrs. Amy Howe.

SAMUEL W. TILDEN

MONTREAL, Jan. 7 (Canada Press)—Samuel W. Tilden, who formerly was well known as an amateur boxer and basketball player in the United States in Montreal and was manager here for an Ottawa printing and lithographing firm, died yesterday at his home in neighboring Westmount at the age of 70. He was born in Worcester, Mass., and came to Montreal in 1901 as manager of Mortimer Ltd., Ottawa printers. He leaves a widow.

the Spirit.—Ephesians, V., 18.

gested by Rev. J. A. Villelli, pastor of Sea and Land Presbyterian Church, Manhattan.)

HUMAN SIDE OF THE NEWS

By Edwin C. Hill

A Magician in Science.

TO the moon with America's greatest living inventor, Nikola Tesla! Well, not precisely—though if Father Time were to grant Mr. Tesla another half century or so of life I, for one, wouldn't bet against the moon adventure under his eager auspices. The man has lived long and wrought greatly, and the keenest desire of his life is to live longer and materialize the dreams which haunt his scientist's imagination.

He is working now on an energy-transmitting device to project electrical waves to Lady Luna, waves of such potency and power that a tract of light as large, perhaps, as the State of Connecticut could be fixed momentarily upon the surface of the moon. If he lives long enough he will do it, and that's a fairly safe prediction, for Dr. Tesla has accomplished many marvels in his 82 years upon this earth.

His birthday falls on July 10, and finds him in fair health for one of his years.

It was 40 years ago, B. M., Before Marconi, that Nikola Tesla predicted the coming of radio communication and sent electrical waves racing around the globe from high voltage generators.

Another dream of this truly great scientist is to perfect what we laymen might call a "magic ray" which would protect ships from the mariner's greatest peril, fog, and bring them unfailingly to port. It might indeed—so far does his dream range out over the troubled field of human life—put an end to war. A magic ray so terrible, so powerful that raiding airplanes could not last one second above their designed victim of a city.

Mr. Tesla lives, and dreams and works at a New York hotel and there, usually, you may find him upon any proper business—amiable, charm-

ingly conversational, intensely interesting with his glimpses of new marvels and promises of a new world. He is the only American inventor with 750 basic patents to his credit—the only inventor who ever lived, so far as this writer knows, who ever explored so many fields with patented results to prove his roving and wanderings. Half the civilized nations of the world have honored him with orders and medals.

Nikola Tesla is an Austrian. He was only 28 years old when he came from the University of Prague to enter the laboratory of the great Edison. That was the beginning of an amazing career. For more than 50 years he has been a man of magic. Full-fledged from his amazing brain have come marvel after marvel. He gave us the induction motor which made possible alternating electric current. He gave us innumerable indispensable electrical appliances. His imaginative mentality reaches out into the hereafter itself. He wonders if life cannot be recalled—as to whether a man electrocuted in the death chair could be restored to life by the application of an electrical current. He really thinks it could be done.

It was 30 years ago, on Pike's Peak, that he is sure he plucked from the air at that 14,000 foot height signals from the planet Mars. Mr. Tesla believes, as the late Prof. Lawrence Lowell believed, that there are living, humanlike creatures on our nearest neighbor in the family of planets, and much more intelligently advanced than we are. He thinks that they have been trying for many centuries to reach our dull intelligences.

Now, at 82, Nikola Tesla is working not only on an apparatus to prove unfailing communication, to insure safety of ships, to locate hidden treasure and to determine the earth's physical constants, but also on a means to end war. Mr. Tesla is reaching into the infinite to snatch a bolt of lightning for the salvation of mankind. It is to be the Tesla death beam—literally a lightning bolt. It will have such a terrific energy that a thousand invading airplanes could be sent earthward in flaming fragments within ten heartbeats—annihilated. Two hundred thousand men, horse, foot and artillery, crossing the border of a defeated enemy could be dropped dead in their tracks.

MARCH OF EVENTS

By Benjamin DeCasse

EARTHQUAKE

Test in the Year 1928.

To the What Do You Think Editor:
 Sir: Answering the query of
 "One Who Was There" in your
 issue of the twenty-second, re the
 demonstration by Nikola Tesla: In
 extensive files re Houston street
 and an item of July 11, 1935,
 entitled "Scientist Tesla Reveals
 Self as Earthquake-Maker: Started
 Houston Street Tremblers 37 Years
 Ago; Could Shake Down Whole
 City." It is too long to quote, but
 the date is probably what concerns
 you. The date when Tesla started the Hous-
 ton street earthquake, and probably
 he had occupied his laboratory for
 years, before that. And The New
 York Sun of July 11, 1935, carried
 three pictures of Tesla.

MORRISON V. R. WEYANT.

MAN'S GREATEST ACHIEVEMENT

By Nikola Tesla.

When it is born its sense-organs are brought in contact with the outer
 world of sound, heat and light, beat upon its feeble body, its sensitive
 nerves quiver, the muscles contract and relax in obedience: a gasp, a breath,
 a marvelous little engine, of inconceivable delicacy and complexity
 unlike any on earth, is hitched to the wheelwork of the Universe.

The little creature labors and grows, performs more and more involved operations, be-
 comes sensitive to ever subtler influences and now, there manifests itself in the
 fully developed being - Man - a desire, mysterious, inscrutable and irresistible: to
 imitate nature, to create, to work himself the wonders he perceives. Inspired to
 this task he searches, discovers and invents, designs and constructs, and covers with
 monuments of beauty, grandeur and a star of his birth. He descends into the
 bowels of the globe to bring forth its treasures and to unlock its immense
 imprisoned energies for his use. He probes the dark depths of the ocean and the
 azure regions of the sky. He peers into the innermost nooks and recesses of
 molecular structure and lays bare to his worlds infinitely remote. He subdues
 and puts to his service the fierce, devouring spark of Prometheus, the titanic
 forces of the waterfall, the wind and the tide. He tames the thundering bolt of
 Jove and annihilates time and space. He makes the great Sun itself his obedient
 toiling slave. Such is his power and might that the heavens reverberate and the whole
 earth trembles by the mere sound of his voice.

What has the future in store for this strange being, born of a breath, of per-
 ishable tissue, yet immortal, with his powers fearful and divine? What magic will
 be wrought by him in the end? What is to be his greatest deed, his crowning achieve-

TESLA HAS PLAN TO SIGNAL MARS

Scientist, 81 Years Old,
Celebrates Birthday.

DECORATED BY 2 COUNTRIES

Seeks Guzman Prize for Idea on
Planet Communication.

Nikola Tesla is 81 years old. Some reference books, including "Who's Who," fix the year of his birth at 1857. He does not know whether the anniversary should have been celebrated Friday or, as it was, on Saturday, because it was just at midnight between July 9 and July 10 that he was born. But the year was 1856.

It was a most unusual birthday party the inventor held at the Hotel New Yorker, where he makes his residence. For the Ministers of his native Yugoslavia and neighboring Czechoslovakia and their staffs, and a handful of newspaper men, Dr. Tesla had provided a most unusual material and mental feast.

Figuratively, at least, they are still smacking their lips today over the food and wines and speculating about what may come from the discoveries the scientist announced, his quest for the French Academy prize for interplanetary communication, the perfection of a tube to carry immense electrical voltages, and some of the more abstract observations regarding cosmic rays and what makes this universe of ours expand and contract, oscillating instead of always expanding as some physicists hold.

Considering his years and the fact that recently he was the victim of an automobile accident which shook his system seriously, Dr. Tesla is exceedingly vigorous. His thinning hair, although predominantly white, still has considerable black. His eyes are as keen and penetrating as ever. He speaks distinctly although, of course, was a bit of the accent he has always had. But he picked up questions quickly and answered them in a manner that showed a tremendous grasp of all the latest theories of the astronomers, physicists and other scientists.

Announces Discoveries.

In recent years Dr. Tesla has made a habit of announcing on his birthdays some of the discoveries he has made in the past year. And he feels that with the passing of the years they have increased in importance. He said: "The maximum power of man is reached in his age rather than in his prime, as many suppose. Every one should have a decade to sum up the work of his lifetimes after he reaches the age of seventy-five. By then, if he has worked constantly in one field, he has gained so much experience that the solution of problems becomes much easier."

Everything at the birthday party was designed to lead up to the discussion of the inventor's latest achievements. Although he tasted only two of the courses and refrained altogether from any drink but water, he treated his guests to the finest in foods and wines.

The piece de resistance was "Carnard en casserole a la Tesla," a dish he had planned himself about ten years ago, consisting of duck roasted slowly in a casserole, smothered with whole stalks of celery. It won unstinted praise from the diplomatic representatives.

Dr. Tesla did take just a taste of this dish to make certain that it had been properly prepared and, as a sign of his approval had the chef come in to receive the applause of

He gave little glimpses of his boyhood life in Yugoslavia. One gathered he had acquired much of his genius from his learned father, a Slavonian priest, and his mother, a practical and also a brilliant woman. When, in 1884, Dr. Tesla landed at the Battery he had just 4 cents. He had only gone a few blocks up Broadway when he saw some men sweating over an electrical machine that had broken down.

"It was a machine I had helped to design, but I did not tell them that," he said. "What is the matter?" and they said, "This thing won't work." I asked, "What would you give me if I fix it?" "Twenty dollars" was the reply. I took off my coat and went to work. I had it running perfectly in an hour and had earned \$20."

He shortly found it was not all as easy as that. There were many days when he did not know where the next meal was coming from. "But I was never afraid to work. I went to where some men were digging a ditch. I said I wanted to work. The boss looked at my good clothes and white hands and he laughed to the others. 'This man wants to work.' But he said 'All right. Split on your hands. Get in the ditch. Go to work.' And I worked harder than anybody. At the end of that day I had \$2. And I kept it up until I had enough to get started again."

Support Bums Today.

"Could that happen today?" he was asked. "There was a serious pause, a grave frown and he said, 'I am afraid not. The present is destructive. The workers are expected to support the bums.'"

Before the birthday cake was cut Dr. Tesla was invested with the orders which Yugoslavian and Czechoslovakian ministers had brought. Dr. Constantine Fotitch, Yugoslavian Minister, who was attended by R. Petrovich, first secretary of his legation, and R. P. Stoyanovich, the Consul-General here, bestowed the grand Cordon of the White Eagle in behalf of King Peter.

Dr. Tesla sharply assailed those physicists who contend that cosmic rays originate in far places of the universe where matter is converted into energy. He produced a formula saying "The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of its velocity. Let the mass be reduced, the energy is diminished by the same proportion. If it be reduced to zero, the energy is likewise zero for any finite velocity."

About half of his talk was devoted to abstract scientific problems.

Turning from the more metaphysical aspects of his studies to the practical, Dr. Tesla disclosed his greatest ambition is to be the man who evolved a method of communicating with other planets. He thinks he has found the answer and is preparing to lay its formula before the Institute of France in quest of the Pierre Guzman prize of 100,000 francs offered for a means of communicating with other worlds.

The man who accomplishes this, he feels, will be remembered after all present inventions are forgotten.

Streamlined Train Takes Elks to Denver

DENVER, July 12 (A. P.).—The Denver Rocket, a Rock Island streamlined train, concluded its maiden trip at 11:35 P. M. yesterday, bringing a delegation of Chicago Elks to the national convention here.

The train, an 1,800-horse power motor pulling three cars, left Chicago at 7 A. M., making the trip in 16 hours and 35 minutes.

residence, for the Ministers of his native Yugoslavia and neighboring Czechoslovakia and their staffs, and a handful of newspaper men. Dr. Tesla had provided a most unusual material and mental feast.

Figuratively, at least, they are still smacking their lips today over the food and wines and speculating about what may come from the discoveries the scientist announced. His quest for the French Academy prize for interplanetary communication, the perfection of a tube to carry immense electrical voltages, and some of the more abstract observations regarding cosmic rays and what makes this universe of ours expand and contract, oscillating instead of always expanding as some physicists hold.

Considering his years and the fact that recently he was the victim of an automobile accident which shook his system seriously, Dr. Tesla is exceedingly vigorous. His thinning hair, although predominantly white, still has considerable black. His eyes are as keen and penetrating as ever. He speaks distinctly although, of course, was a bit of the accent he has always had. But he picked up questions quickly and answered them in a manner that showed a tremendous grasp of all the latest theories of the astronomers, physicists and other scientists.

Announces Discoveries.

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Dr. Tesla did take just a taste of this dish to make certain that it had been properly prepared and, as a sign of his approval had the chef come in to receive the applause of his guests. The other dish of which he partook was a jellied consommé.

Alcohol, he believes, is a great thing. Whisky and wine are preferable to coffee and tea. As his guests smacked their lips over some of the vintages he had brought forth for the occasion, they were disposed to agree with Dr. Tesla on this point.

Genius From Parents.

It was in the random conversation of the meal that one learned many intimate things about Dr. Tesla.

"... more than anybody. At the end of that day I had \$2. And I kept it up until I had enough to get started again."

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BOXES AND BASKETS
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SCHRAFFET'S
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and Boston sailings

Chicago Daily News
July 15, 1935

THE CHICAGO DAILY NEWS

DAILY NEWS PUBLISHING CO., CHICAGO, ILL.
ESTABLISHED 1877THE CHICAGO DAILY NEWS, INC.
FRANK K. MANN, President

MEMBER OF THE ASSOCIATED PRESS

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The Chicago Daily News is a member of the National Newspaper Publishers' Association and the National Association of Public Relations.

MONDAY, JULY 15, 1935

Average daily circulation for the year 1934
ducting all unpaid

days the commutator, which made it possible for the dynamo to deliver direct current, was not only necessary, but had become a sacred technical cow. Without it there could be no direct current from the dynamo, and science knew not how to handle the other kind.

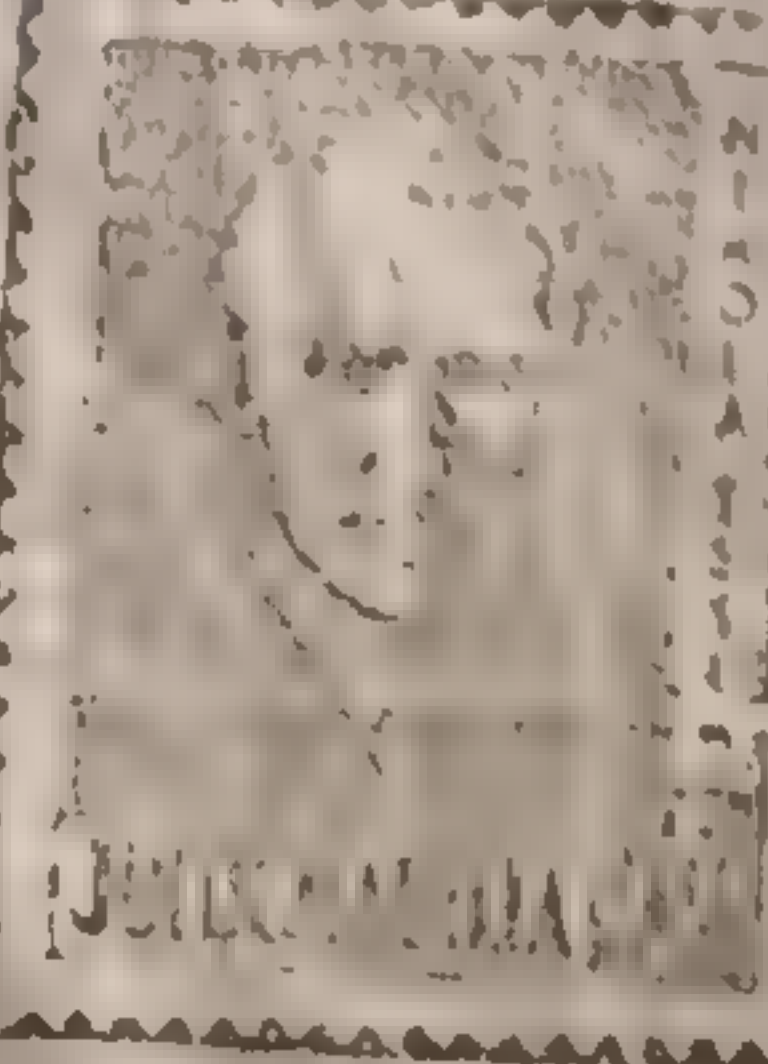
Tesla devoted years to knocking those commutators off the generator. To do that he had to develop an entirely new technology, to make alternating current useful.

Did he succeed? Look about you!

PUZZLE STORIES IN STAMPS
ELECTRIC WIZARD

SOME of the most important inventions of the world were made by a man who was born in 1856 in Smiljan, Croatia. He was a genius, a visionary, and a pioneer. He was Nikola Tesla, the electric wizard.

He came to the United States when he was a youth. Here he discovered the principle of the rotary magnetic field, and since has been working on other ideas which seem so futuristic as to cause more conservative scientists to ridicule him. Yet, while he divulges his secrets of a proposed death ray, or a mysterious source of new power, or the photography of thought, he also scoffs at Einstein's theory of relativity and the general belief that the



sun is cooling off gradually. Recently, on the occasion of Tesla's 80th birthday, Yugoslavia issued a set of four stamps picturing the scientist.

(Copyright, 1935; NEA Service, Inc.)

Practice

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Tools Predict Ships Powered By Shore Boats

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Nikola Tesla Explains His "World War"

By Edwin C. Hill
The Globe Trotter

TO END WAR

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By E. A. Guest

Summer Cottage Creatures

What strange acquaintances I make
Out at the cottage by the lake.

So many curious things I see,
A different world it seems to be.

The rooms, the walls, the fields are rife
With most fantastic forms of life:

Moth millers of a might size,
Mysterious double-jointed flies;

Spiders and webs and things that crawl
Through window space and crannied wall;

Mosquitoes, gnats and stinging mites
Buzz round the lamps on Summer nights,

Serving with ghastly frightfulness
Some purpose which I cannot guess

Countless their number and their kind,
And most inauspiciously designed;

Strange shapes seem to live and die
In wondering why.

Thomas A. Guest

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SIGNALS FROM MARS

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ONCE

SOME middle aged men who
complain bitterly over not

having received a square deal,
dissipated the earnings of their

younger years in having a good
time.

They should remember that
when tempted to grumble.

Some period in life must be
dedicated to savings and self-

discipline if an accumulation is
ever to be made.

If not imposed voluntarily in
younger years it will be required

later.

It is a relief to hear certain
old fellows say: "Well, I had a

good time during the years when
I was physically fit to enjoy it.

My Journal

Aug 10, 1935

VIII. Dendroica

Answer:

209.

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jobs. But this is only true for
limited here.

the rays by the
rising air currents.

Various methods were used

...the primary substance.

When radio-active phenomena were discovered I was prepared to view them merely as secondary effects of external radiation, and as no trace of such a disturbance could be detected on earth I concluded that the primary activating rays were of cosmic origin and most likely to emanate from suns closely resembling our luminary. As the first step toward clearing up the mystery I undertook to ascertain whether the earth was charged to a potential sufficiently high to produce the

Energy Appointments
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The first major one recorded by the automatic "rain-gages" of the trees. Three hundred years before no actual drought was found, but the trees show

1. The first step is to identify the main components of the system. This includes the hardware (CPU, memory, storage) and software (operating system, applications).

2. The second step is to determine the requirements for each component. This includes the performance, reliability, and security requirements.

3. The third step is to select the appropriate components based on the requirements. This involves comparing different options and choosing the best one.

4. The fourth step is to install and configure the components. This includes setting up the hardware and software, and ensuring they are working correctly.

5. The fifth step is to test the system. This involves running various tests to ensure the system is working as expected.

6. The sixth step is to monitor the system. This involves keeping an eye on the system's performance and making adjustments as needed.

7. The seventh step is to maintain the system. This involves updating the software and hardware, and ensuring the system is secure.

8. The eighth step is to document the system. This involves creating a record of the system's configuration and performance.

9. The ninth step is to train the users. This involves teaching the users how to use the system and what to do in case of a problem.

10. The tenth step is to evaluate the system. This involves assessing the system's performance and making improvements as needed.

[illegible]

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Medical Case Sets Mark

Medicine Case Study: Mary

but fearing a relapse the doctor has him taken to a hospital as soon as the steamer reached Albany.

literature of credible value for its extent and almost all for the erroneous views produced. In this brief communication dwell on only a few of

It is held, in accordance with findings, that at great altitudes the

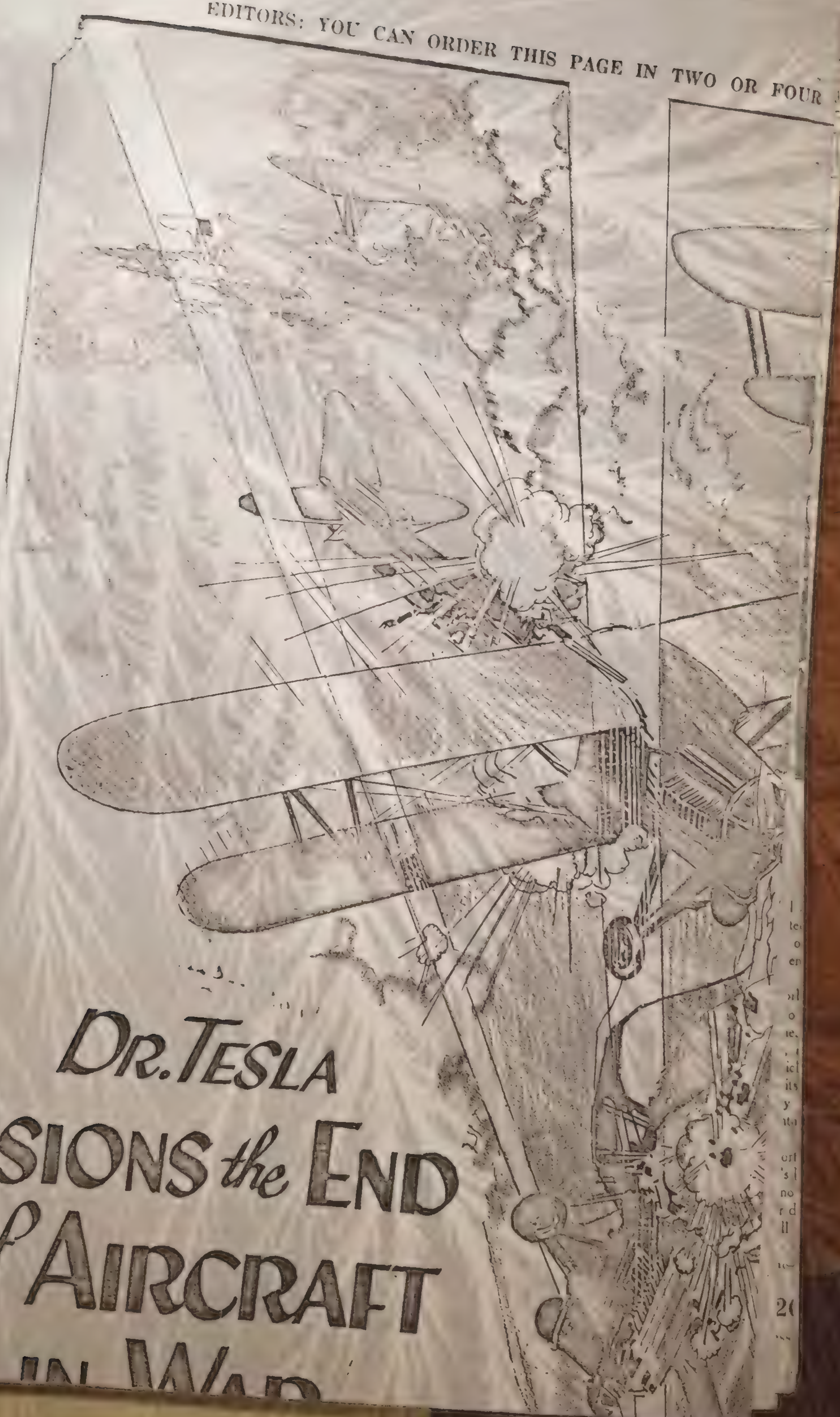
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7/7. The vessel being lost, 18, 1930

EDITORS: YOU CAN ORDER THIS PAGE IN TWO OR FOUR

DR. TESLA
**VISIONS *the* END
of AIRCRAFT
IN WAR**



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EDITORS: YOU CAN ORDER THIS PAGE IN TWO OR FOUR COLORS AS WELL AS IN BLACK ONLY.—NEA SERVICE, INC.

DR. TESLA VISIONS the END of AIRCRAFT IN WAR

The famous inventor's new beam of death could bring down a fleet of 10,000 planes at a distance of 250 miles, he claims, and it also would make obsolete the submarine

IF, occasionally, nations decide that they must have war just for the thrill of a throbbing drum and a singing bugle, it can be staged on the sea, Dr. Tesla says. Navy supremacy will banish aircraft.

"The airplane will cease to be used as a means of offense," the great inventor explains. "It will be used entirely for peace, as it should be. An airplane, through the very nature of its construction, can not carry with it a generating plant for the beam. If it comes in contact with a country which is protected, it has no chance.

"The battleships will ride to sea safe from air raids, for they will be equipped with smaller plants for generating a beam of sufficient power to destroy any attacking airplane. But they will not be permitted to come near the shore of a protected country and attack it with any chance of success.

"The nation which has the best equipped battleships, however, will gain the supremacy of the seas. Submarines will be obsolete, for the methods of detecting them will be perfected to such a degree that there will be no longer any advantage in submerging.

Voltages never before attained, of 50,000,000 volts or more, will have to be applied.

The man who is responsible for so many discoveries and improvements has devoted his entire life to his scientific pursuits. Tall, lean, reserved, his path goes between the two small laboratories and the various manufacturing plants with which he has contact.

Born in Yugoslavia, Tesla comes from a race of inventors.

"On my mother's side, for three generations, almost all members of the families were inventors," he says. "My mother was Georgianna Mandic, who was noted as an inventor of household appliances. One of the things which she perfected was her own weaving machine.

"Her family can be traced back to the seventh century, in the historical records. My grandfather was an officer in Napoleon's army."

TESLA began to invent at the age of six. As he grew up his interest focused in the laboratory.

"I sleep about one and one-half hours a night," the inventor says. "I think that is enough for any man. When I was young I needed more sleep. But age doesn't require so much. There are so many things to do I do not want to spend time sleeping needlessly. In my family all were poor sleepers. Time spent in sleep is lost time, we always felt."

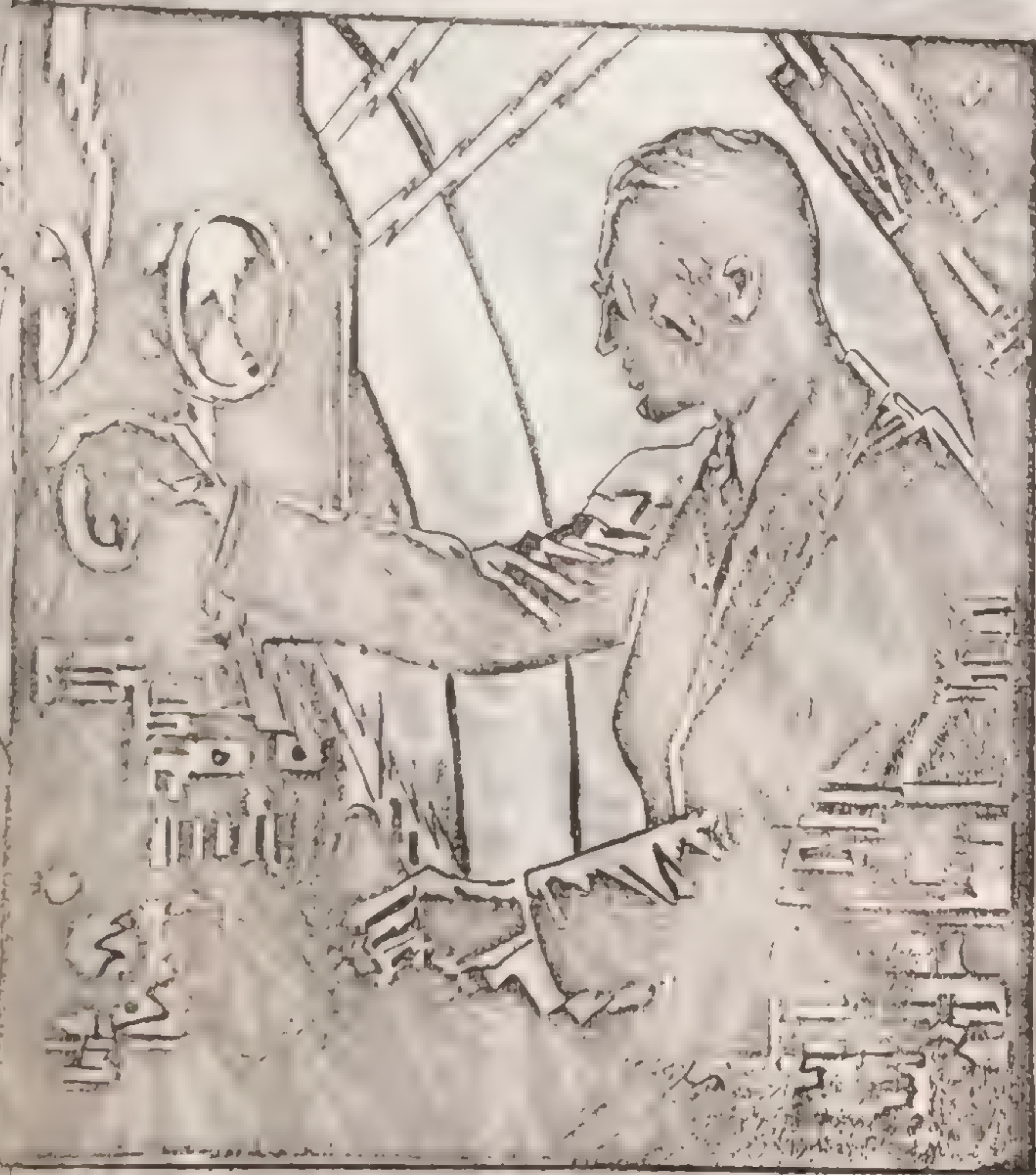
Tesla, busy with his 700 inventions, never had time for marriage. He never had a girl in his young days. He never had a romance. There was no leisure for them.

His diet is simple. He lives chiefly on vegetables, cereals and milk. The menu includes

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An artist's conception of the way a technician, sitting in one of Dr. Tesla's great generating plants, would use the new beam to destroy hostile airplanes.

speed, and any amount be transmitted by them. not a gun, but one which is to the present."

protected world, in which their time to pursuits of fascinating one.

of the world, every country at plants which will offer the nation itself and invaders. Only ships flying can sail into a foreign

resembling forts placed at a country's border, will they are immovable, they means for defense, and impossible will greatly advance.

Week Magazine—Printed in U. S. A.)

When a submarine is located the beams will function under water, though not quite so effectively as in air."

FOUR new inventions of Dr. Tesla are involved in the creation of the beam.

"Briefly, the first comprises a method and apparatus for producing rays and other manifestations of energy in free air, eliminating the high vacuum heretofore indispensable," he explains.

"The second one is the process for producing electrical force of immense power.

"The third method amplifies the process, and the fourth produces a tremendous electrical repelling force."

In times of peace such a plant can be used to transmit power in any amount up to its full capacity and to any place on the earth visible through a telescope, according to its inventor.

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His diet is simple. He lives chiefly on vegetables, cereals and milk. The menu includes onions, spinach, celery, carrots, lettuce, with potatoes occasionally. Whites of eggs and milk complete the diet. There is no meat on his vegetable plate. He never smokes or tastes tea, coffee, alcoholic beverages or any other stimulant.

While he is perfecting the beam which will defend nations from attack, the inventor is playing with other ideas. He goes from one to the other, he says, as this or that gains paramount interest or some new clue is suggested.

"BUT what is giving me more fun than anything I have done for a long, long time," Dr. Tesla explains, "is an electric bath which I hope to have ready for general use very soon.

"It doesn't require much room. There is a platform on which the person stands. He turns on the current. Instantly all foreign material such as dust, dandruff, scales on the skin and microbes is thrown off from the body. The nerves, too, are exhilarated and strengthened. The 'bath' is excellent for medical as well as for cleaning purposes."

However, the war picture gives the master inventor more satisfaction than the minor inventions. He is rejoicing because his instrument of death will save millions of lives and inestimable property.

His only regret is that there may be another war before the discoveries he has made have been placed before the Disarmament Conference at Geneva, and generally adopted by the nations of the world.

"The next war, and I am afraid that there will be one before long," he says, "will be fought in the air. But if the beam is adopted war in the air will cease.

"Whatever battles there are thereafter will be confined to the sea. But no nation will dare to attack another nation when every country is armed. There will be a general feeling of safety throughout the world."

October 20-21, 1934. In Ordering Mat Designate Page 3, OCTOBER 21

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DR. TESLA VISIONS the END of AIRCRAFT IN WAR

By Helen Welshimer

"**A**MERICA Enters War!" "United States Joins Allies!" "Congress Declares War!" The newsboys were screaming the headlines through the rainy April night. Men and women stood on corners, talking, talking, talking—

The drift of the days went on. Troop trains pulled out of the stations, from Centerville, Mississippi, up to Bangor, Maine. The drums throbbed and the trumpets blew. The ships sailed and the casualty lists came back. One by one the gold stars replaced the white—

And 1917 drifted into 1918.

Dr. Nikola Tesla was in his laboratory trying hard to solve a problem of ages. Once in a while he raised his head to listen. Then he turned back to his experiments. He was going to end war!

The noted inventor, 78 years old now, already had 700 inventions to his credit. This was to be his greatest.

Years marched on. The fanfare and the drums were done. The dead were buried. The living came home.

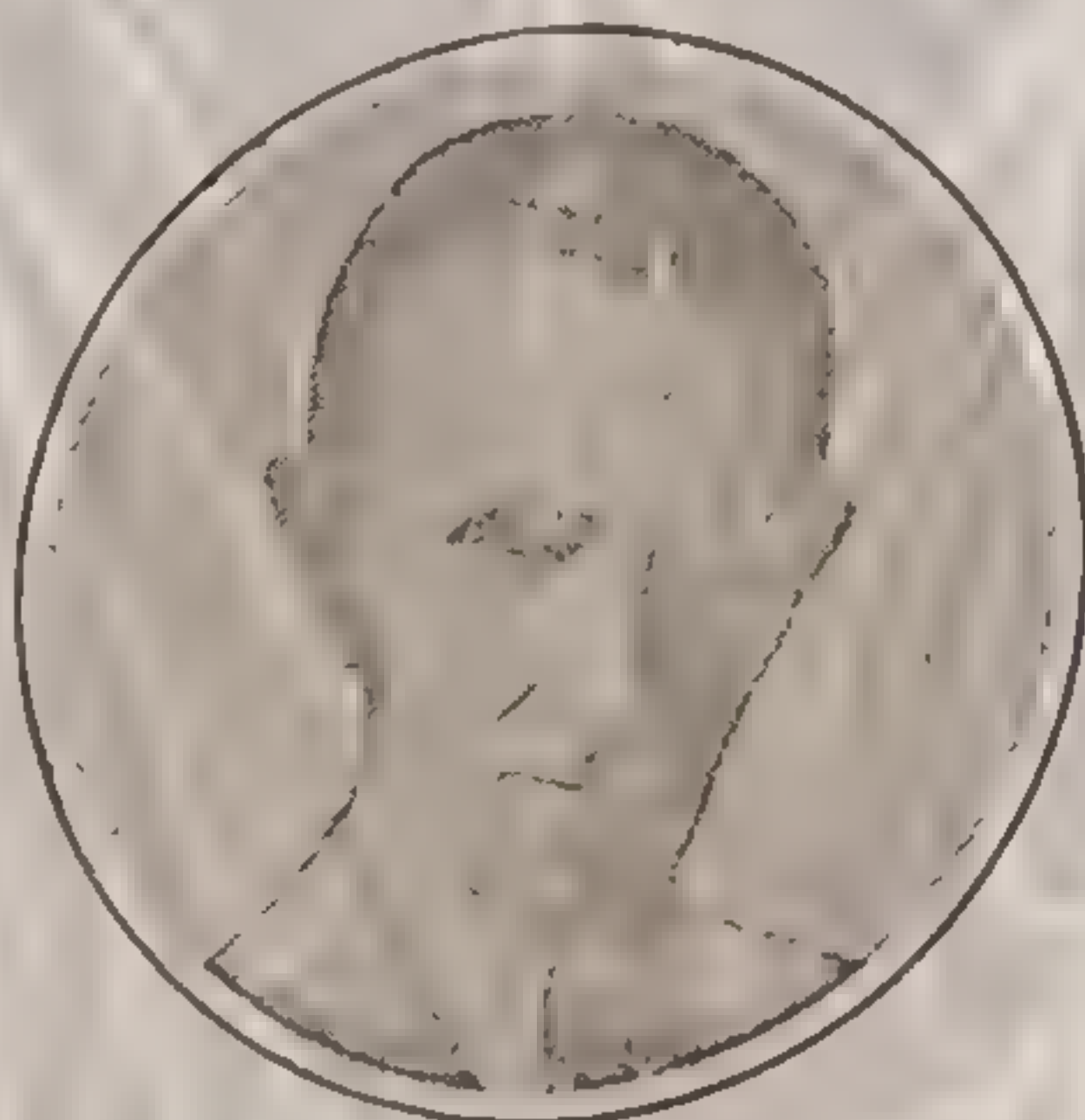
NOW, 15 years after the war has ended, Tesla, one of the greatest inventors of all time, has announced that his invention to end all wars, by a perfect means of defense which any nation can employ, is ready. Soon, he says, he will take it to Geneva to present it to the Peace Conference.

Whether it is a dream or reality may soon be known. He claims to have created a new agent, silent and invisible, which kills without trace and yet pierces the thickest armor. It is a beam of death and destruction formed of minute particles of matter carrying such tremendous energy that they could bring down a fleet of 10,000 attacking planes and wipe out an army of millions at a distance of 250 miles.

"The invention," says Dr. Tesla, "will make war impossible for it will surround any country using this means with an impenetrable, invisible wall of protection. Plants for the

generating of this beam will be erected along the coasts and near cities. One plant will afford perfect safety within an area of 40,000 square miles.

"The beam will be effective at any distance at which the object to be destroyed can be perceived through a telescope. Every country will have to adopt this invention, for without it a nation will be helpless.



Dr. Nikola Tesla.

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lets moving at a terrific speed, and any amount of power desired can be transmitted by them. The whole plant is incomparably superior to the present."

THE picture of a protected world, in which men will devote their time to pursuits of peace, is a strangely fascinating one. Imagine the map of the world, every country surrounded by absolute protection, absolute death to any intruder. Only ships flying white flags of peace can sail into a foreign harbor.

The power plants resembling forts placed at strategic distances along a country's border, will be on guard. They are immovable, they will constitute an inviolable means for defense, and by making invasion impossible will greatly advance the cause of peace.

(Copyright, 1934, by EveryWeek Magazine—Printed in U. S. A.)

The famous inventor's new beam of death could bring down a fleet of 10,000 planes at a distance of 250 miles, he claims, and it also would make obsolete the submarine

If, occasionally, nations decide that they must have war just for the thrill of a throbbing drum and a singing bugle, it can be staged on the sea, Dr. Tesla says. Navy supremacy will banish aircraft.

"The airplane will cease to be used as a means of offense," the great inventor explains. "It will be used entirely for peace, as it should be. An airplane, through the very nature of its construction, can not carry with it a generating plant for the beam. If it comes in contact with a country which is protected, it has no chance."

"The battleships will ride to sea safe from air raids, for they will be equipped with smaller plants for generating a beam of sufficient power to destroy any attacking airplane. But they will not be permitted to come near the shore of a protected country and attack it with any chance of success."

"The nation which has the best equipped battleships, however, will gain the supremacy of the seas. Submarines will be obsolete, for the methods of detecting them will be perfected to such a degree that there will be no longer any advantage in submerging."

Voltages never before attained, of 50,000,000 volts or more, will have to be applied.

The man who is responsible for so many discoveries and improvements has devoted his entire life to his scientific pursuits. Tall, lean, reserved, his path goes between the two small laboratories and the various manufacturing plants with which he has contact.

Born in Yugoslavia, Tesla comes from a race of inventors.

"On my mother's side, for three generations, almost all members of the families were inventors," he says. "My mother was Georgiana Mandic, who was noted as an inventor of household appliances. One of the things which she perfected was her own weaving machine."

"Her family can be traced back to the seventh century, in the historical records. My grandfather was an officer in Napoleon's army."

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"I sleep about one and one-half hours a night," the inventor says. "I think that is enough for any man. When I was young I needed more sleep. But age doesn't require so much. There are so many things to do I do not want to spend time sleeping needlessly. In my family all were poor sleepers. Time spent in sleep is lost time, we always felt."

Tesla, busy with his 700 inventions, never had time for marriage. He never had a girl in his young days. He never had a romance. There was no leisure for them.

His diet is simple. He lives chiefly on vegetables, cereals and milk. The menu includes potatoes occasionally. Whites of eggs and milk complete the diet. There is no meat on his vegetable plate. He never smokes or tastes tea, coffee, alcoholic beverages or any other stimulant.

While he is perfecting the beam which will defend nations from attack, the inventor is playing with other ideas. He goes from one to the other, he says, as this or that gains paramount interest or some new clue is suggested.

"BUT what is giving me more fun than anything I have done for a long, long time," Dr. Tesla explains, "is an electric bath which I hope to have ready for general use very soon."

"It doesn't require much room. There is a platform on which the person stands. He turns on the current. Instantly all foreign material such as dust, dandruff, scales on the skin and microbes is thrown off from the body. The nerves, too, are exhilarated and strengthened. The 'bath' is excellent for medical as well as for cleaning purposes."

However, the war picture gives the master inventor more satisfaction than the minor inventions. He is rejoicing because his instrument of death will save millions of lives and inestimable property.

His only regret is that there may be another war before the discoveries he has made have been placed before the Disarmament Conference at Geneva, and generally adopted by the nations of the world.

"The next war, and I am afraid that there will be one before long," he says, "will be fought in the air. But if the beam is adopted war in the air will cease."

"Whatever battles there are thereafter will be confined to the sea. But no nation will dare to attack another nation when every country is armed. There will be a general feeling of safety throughout the world."

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In times of peace such a plant can be used to transmit power in any amount up to its full capacity and to any place on the earth visible through a telescope, according to its inventor.

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DR. TESLA VISIONS the END of AIRCRAFT IN WAR

By Helen Welshimer

"A MERICA Enters War!"
"United States Joins Allies!"
"Congress Declares War!"

The newsboys were screaming the headlines through the rainy April night. Men and women stood on corners, talking, talking, talking—

The drift of the days went on. Troop trains pulled out of the stations, from Centerville, Mississippi, up to Bangor, Maine. The drums throbbed and the trumpets blew. The ships sailed and the casualty lists came back. One by one the gold stars replaced the white.

And 1917 drifted into 1918.
Dr. Nikola Tesla was in his laboratory trying hard to solve a problem of ages. Once in a while he raised his head to listen. Then he turned back to his experiments. He was going to end war!

The noted inventor, 78 years old now, already had 700 inventions to his credit. This was to be his greatest.

Years marched on. The fanfare and the drums were done. The dead were buried. The living came home.

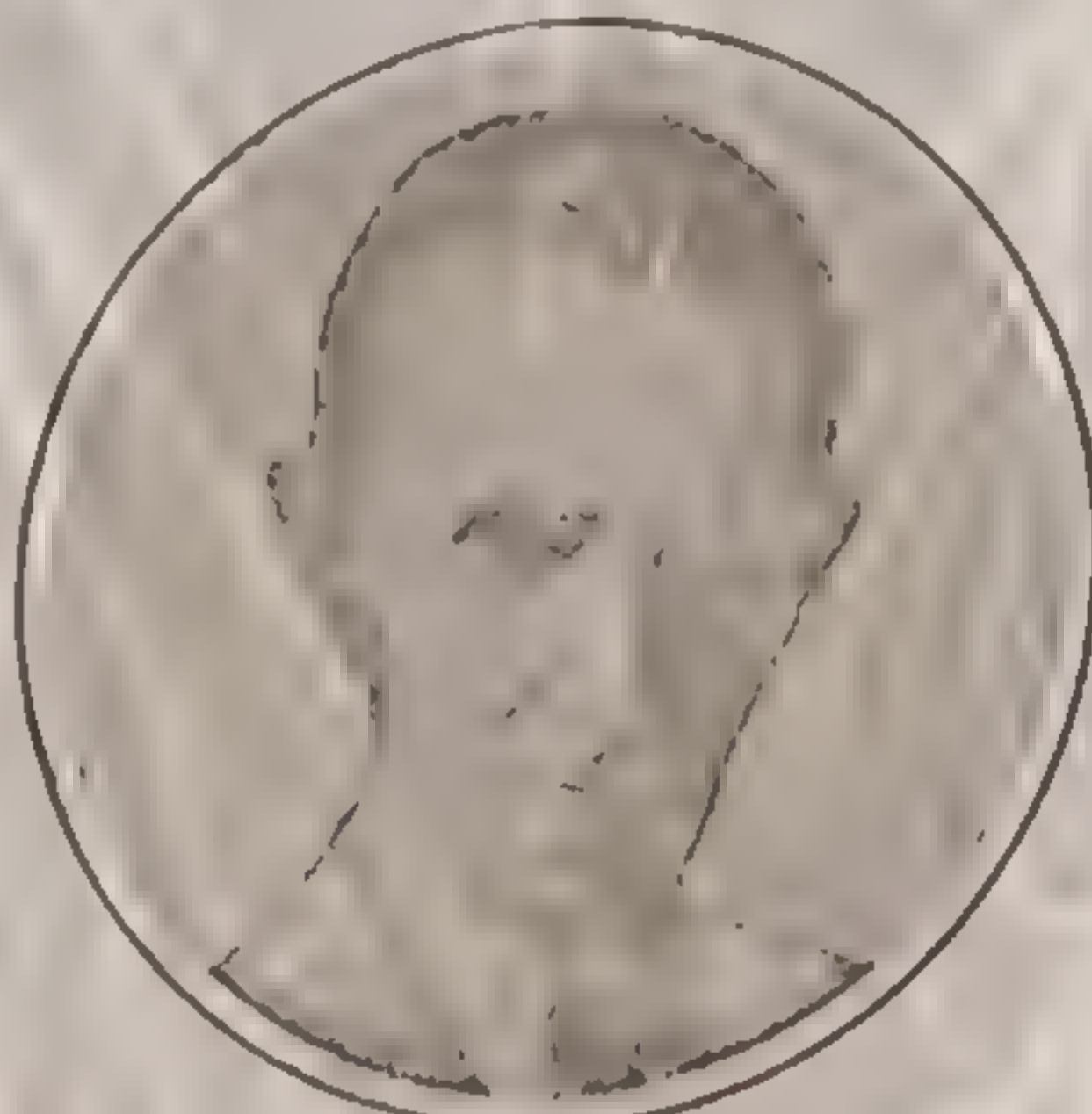
NOW, 15 years after the war has ended, Tesla, one of the greatest inventors of all time, has announced that his invention to end all wars, by a perfect means of defense which any nation can employ, is ready. Soon, he says, he will take it to Geneva to present it to the Peace Conference.

Whether it is a dream or reality may soon be known. He claims to have created a new agent, silent and invisible, which kills without trace and yet pierces the thickest armor. It is a beam of death and destruction formed of minute particles of matter carrying such tremendous energy that they could bring down a fleet of 10,000 attacking planes and wipe out an army of millions at a distance of 250 miles.

"The invention," says Dr. Tesla, "will make war impossible for it will surround any country using this means with an impenetrable, invisible wall of protection. Plants for the

generating of this beam will be erected along the coasts and near cities. One plant will afford perfect safety within an area of 40,000 square miles.

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The airplane will cease to be used as a means of offense," the great inventor explains. "It will be used entirely for peace as a scout. No longer, through the use of this beam, a country can carry with it a generating plant for the beam. If it comes in contact with a country, it is destroyed."

The beam, which will be used to sea, will be used to destroy any attacking airplane. But they will not be permitted to come near the shore of a protected country and attack it with any chance of success.

"The nation which has the most powerful battleships, however, will gain the supremacy of the sea. Submarines will be perfected to such a degree that there will be no longer any advantage in submerging

any vessel ever before attained, of 50,000,000 horsepower, will have to be applied.

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by HENRY N. ROSE

[illegible]

... we have had to wait a certain
benefits are now lost

Another form of the same
you have been contacted by
1924, with a list of names
you state to be a list of names

fulfill my prophecy. Perhaps not, but on the whole I have been extremely successful. You would be surprised to know how many of my discoveries and inventions are in extensive use. To give an illustration, I may refer to my wireless system of transmission of energy which is looked upon by many as a pipe dream. These uninformed people should be told that "wireless" is not a new invention but an art involving the use of many of them, and of these I have contributed the fundamental and most essential, and they are universally employed. There is as yet no pressing necessity for wireless transmission of power in industrial amounts, but as soon as it arises the system will be applied and with perfect success.

Still another item which has interested me is a report from Washington in the World-Telegram of July 13, 1934, to the effect that scientists doubt the death ray effect. I am quite in agreement with the doctors and probably most scientists in this respect than anybody else, for I speak from long experience.

Rays of the requisite energy can not be produced, and then, again their intensity diminishes with the square of the distance. Not so the agent I employ, which will enable us to transmit to a distant point billions of times more energy than is possible by any kind of ray.

We are all familiar, but as I explained the subject in the light of modern theoretical and experimental knowledge I am filled with deep conviction that I am giving to the world something far beyond the wildest dreams of inventors of all time.

New York.

Asking the Churchgoer for Added Contribution.

By Patrick F. Scanlan, Managing Editor
for the Brooklyn Tablet.

Mr. Stelzle asked the churches to give \$2,500,000 a year for public relief. I showed they are giving far more than that now. Mr. Stelzle said the churches are exempt from \$10,000,000 of taxes. I showed they render services four or five times the total of that amount. Mr. Stelzle closed by repeating his demand.

John Jones on my block goes to church every Sunday. Besides contributing to the upkeep of the church, he gives approximately \$20 a year to unemployment relief and \$20 to the upkeep of the parish school. This \$40 represents a contribution to public welfare—to the city's needs. The families next door to Mr. Jones do not go to church. They do not contribute to unemployment relief through the church or to education work.

Mr. Stelzel's suggestion is not the latter contribute anything but that the former give more than is already giving. It is a demand that is illogical, unreasonable and unjust.

Brooklyn.

Thinks Mr. Farley May
Be Champion Horseman.
N. Scotland.

Our peripatetic Postmaster General, James A. Farley, is a very popular comedian. If nothing else.

...tion of the new and
... scheme like that of
atomic energy, which still
men of science under its
... there is absolutely no
or experimental evidence
... expectation.

The author of the article gives an eloquent account of water power development, appealing vividly to my imagination. The almost miraculous way in which success, with my alternating optimism was achieved. As I review the past, I realize how fortunate it was that at the time when, after years of fruitless tinkering to deaf ears, I finally managed to be heard by a society where a man in the electrical industry towered above all others—the Edison Society over the Philadelphians. A genius of the first order, combining to an unequalled degree, inventiveness and mastery of business, a man truly great, of phenomenal powers—George Westinghouse. He grasped my cause and undertook to wage a war against overwhelming odds.

The defendant's action was undoubtedly directed and controlled as clearly and as honestly as possible. Hanson thought that the wires might be used for domestic laundry to dry. Steinmetz had a very poor opinion of my induction motor. The old interests were powerful and resolved to fight any encroachment on their business by all means fair or foul. But Westinghouse was not dismayed and threw all his energy and resources into the battle of the century. More than once he came near to being snuffed out, but finally he routed his opponents and put the new industry on a firm foundation. It was a monumental achievement unparalleled in the history of technical development. The service he rendered the world is beyond estimate.

But it took another human dynamo, a genius of a different kind—Samuel Insull—to enlarge on the work of Westinghouse and apply the system on a colossal scale. Insull concentrated his efforts on cheapening the production, transmission and distribution of power. He recognized early the economic advantages of large units and prevailed upon the manufacturers to supply him with huge turbo-generators, regardless of cost. He introduced other improvements raising the efficiency and range of central stations and finally realized, practically and successfully, the Super Power System which I had merely suggested in 1893. The results were such as to astonish engineers, and his bold example was quickly followed here as well as in other countries, saving immense sums of money to the consumers.

At present the work of Westinghouse and Ingersoll is carried further in every corner of the globe, providing new resources, transforming cities and communities and contributing to the life, comfort and convenience of hundreds of millions. Let us thank the stars that these great projects lived in our time, as otherwise

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THE WEATHER

Today: Fair and warmer
Tomorrow: Fair and warmer,
followed by showers

Maximum: 75, Minimum: 67
Detailed Report on Page 24

Herald

NEW



WEDNESDAY, JULY 11

Vol. XCIV No. 32,014

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New York Tribune Inc.)

Republicans Offer County Reforms for Entire State

Ready to Go 'Whole Way' with Lehman Plan for Simplification in the Form of Government

The Governor's 'Surprise' Session Opens

Amendments in One Bill Exempted State Job Cut

By higher taxes, to lengthen hours and prices, Henri asserts, the German will be passing a condition of near-starvation providing denials that Hitler has government unemployment.

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Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday

Death Ray Also Available as Power Agent in Peace Times, Inventor Declares

By Joseph W. Alsop Jr.

Dr. Nikola Tesla, inventor of poly-phase electrical current, pioneer in high frequency transmission, predecessor of Marconi with the wireless, celebrated his seventy-eighth birthday yesterday by announcing his invention of a beam of force somewhat similar to the death ray of scientific romance.

It is capable, he believes, of destroying an army 200 miles away; it can bring down an airplane like a duck on the wing, and it can penetrate all but the most enormous thicknesses of armor plate. Since it must be generated at stationary power plants by machines which involve four electrical devices of the most revolutionary sort, Dr. Tesla considers it almost wholly a defensive weapon. In peace times, he says, the beam will also be used to transmit immense voltages of power over distances limited only by the curvature of the earth.

As a hors d'oeuvre to this Jules Vernean announcement, Dr. Tesla disclosed that he has lately perfected instruments which flatly disprove the present theory of the high physicists that the sun is destined to burn itself out until it is a cold cinder



Herald Tribune photo—Stephen Nikola Tesla

floating in space. Dr. Tesla stated that he is able to show that all the suns in the universe are constantly growing in mass and heat, so that the ultimate fate of each is explosion.

Dr. Tesla refused to describe specifically the instruments in question in both discoveries, or even to disclose the principles upon which they

(Continued on page fifteen)

Bid Too Low, City Refuses To Sell Bonds

Banks 'Ganged' to Get \$72,000,000 Issue at Cheap Price, LaGuardia Says After 4% Offer

May Seek Private Investors' Market

Wall St. Defends Yield Basis and Insists That Syndicate Was Justified

The city's yield basis for the \$72,000,000 bond and mortgage issue failed to come off yesterday, F. H. LaGuardia, city comptroller, Joseph D. McGoldrick and other members of the Savings Fund Committee had read the five bids submitted by a bank headed by the Chase National Bank and the Banking Trust of New York & Co. and the Bank of New York Savings Bank.

All the bids except that of the savings bank, which was for 20,000,000 of the serial bonds, were rejected and the good-faith deposit checks returned to the bankers. And after them went a thundering condemnation by Mayor LaGuardia.

Accuse Banks of 'Ganging' The Mayor charged that the banks had "ganged" to get a low tender. He warned them that he would give them one more chance to make an honest, bona fide offer, they didn't accept that chance to city would get the money elsewhere.

The bids were opened in the comptroller's office at noon. It was a momentous occasion, as the city was about to receive bids for the term bond issue in more than 10 years. The Mayor and Mayor Deutch, President of the Board of Aldermen, stood by, as the bids were taken from the comptroller McGoldrick read the tender. Before it was read, before it was read, before it was read.

U.S. Revenue Up Billion Over '33, Report Shows

Processing Taxes, Levied for First Time, Account for 371 Millions of Gain

From the Herald Tribune Bureau

WASHINGTON, July 10.—Internal revenue collections increased in the fiscal year 1934 over 1933 by more than \$1,000,000,000. Detailed tabulations made public today by Guy T. Halvering, Commissioner of Internal Revenue, showed that agricultural processing taxes, which were imposed

Colombia Hails Roosevelt as He Pays Brief Visit

Destroyers Greet President, Then Olaya Rides Through Crowded Streets With Him

By The United Press

CARTAGENA, Colombia, July 10.—In a gesture of good will President Roosevelt stepped on foreign soil here today and extended greetings from the people of the United States to their neighbors in Latin America. Against a background of widely cheering multitudes of natives the

Paralysis Held Hereditary in Harvard Survey

Acc
Of

100

[illegible][illegible]

...to what the new law would do to the relationship. He noted that the new law would not in any way resemble a "cure," but he does believe that this new fact could be used to draw to and permit a promising method of attack.

"It may be indicated," said Dr. [illegible] "that some organs are more susceptible than others to the work necessary to [illegible] polio-myelitis virus and it [illegible] can be remedied. On [illegible] it may be said that [illegible] relatively small proportion [illegible] bites from the many and [illegible] by extraordinary precaution [illegible] for general application".

20 Per Cent Had Family History

An intensive study, Dr. Aycock explained, resulted in the discovery that 20 per cent of the patients working at the Boston Clinic of the Commission, it was found that 20 per cent of these treated had a family history of the disease. In three well isolated communities in Vermont—Waitsfield, Barton and Grand Isle—

most positive accuracy. Like me, I believe that I have done things require no previous explanation once they are properly conceived. There are a few details to be finished--my calculations might be perhaps 10 per cent off at present--and then the whole thing will be presented to the world. It has always been my practice to give the world in sort of preview of what I am doing so that a reaction is prepared."

Power Supply Unlimited

"I should also say, and this is perhaps as important as anything else about it, that in this apparatus all limitations as to electric force and the quantity of electricity transmitted have been removed."

It was evident that Dr. Tesla's work on the force beam as a "peace-time" means of power transmission was far less advanced than his work on it as a defensive weapon. He did not describe the nature of the receiver which will transform the force beam into useful power, though he declared that he had designed one, nor was he able to show just how the dangers of having such death-dealing but invisible beams traveling through the atmosphere could be surmounted.

He came to the idea of a beam of force, he said, because of his belief that no weapon has ever been found that is not as successful offensively as defensively. "The perfect weapon of defense," he felt, would be a front wall, impenetrable and extending up to the limits of the atmosphere of the earth.

Dr. Tella was far less definite in his description of the experiment, which led to his revolutionary prediction of the future of the sun and its system, than he was when talking of the force beam. He had, he said, detected "certain motions in the medium that fills space, and measured the effects of these motions." The results of the experiments had led him "Inevitably" to the conclusion that such bodies as the sun are taking on much more rapidly than they are dissipating it by the dissipation of energy in heat and light.

Such a wall, he believes, is produced by his beam of force. It is produced by a combination of four electrical methods or apparatuses. First, and most important is a mechanism for producing rays and other energy manifestations in free air. Hitherto vacuum tubes have always been necessary. Second is an apparatus for producing unheated quantities of electrical current and for controlling it when produced. The current is necessary as power for the first mechanism. Without this, no rays of sufficient strength could be produced. The third is a method of intensifying and amplifying the second process, and the fourth is a method of producing "the magnetic field."

He pointed out that his theory means a future for the earth as different from the general belief as the future of the Sun. It is generally held that life on the earth will cease when the sun grows so cold that the earth temperature drops to a point where life can no longer be supported. Dr. Tesla prophesies that life on the earth will cease because the planet will grow too warm to support life, and he believes that life will then begin on other planets now too cold. He said that his discovery not only allowed him to predict a very different future for the heavenly bodies from that now generally expected for them, but also to calculate in a new way their age.

Nor were these two discoveries, of

May Aid Use of Serum

The nature of the light, in view of this discovery, has not been determined as yet, but the hereditary theory offers additional possibilities in the use of serum. The value of serum in the fight has thus far not been definitely proved, but is Dr. Aycock's belief that future work on this project will be greatly aided by the commission's discovery.

Dr. Aycock summarizes the new advance in research as follows:

- "1. It tells us a piece of truth.
- "2. It may enable us to select the relatively small proportion of susceptibles from the many and protect them by extraordinary precaution too drastic for general application.
- "3. To close schools is undesirable

in Beeson, member of a Pennsylvania family and a Charles Beeson, steel magnate. The story she had given was so convincing that she had swindled of \$177,000 some acquaintances who had used the old pocketbook trick to get the money. One of the swindlers, a man named Moore, is now serving a four-year term in the penitentiary at Atlanta.

E. Callahan, who, with the late John H. Callahan, proprietor of a Rochester stand and testified that he and her husband were in California they were out of \$141,000—all but their life savings—by virtue of the method used by Davis and Beeson. Callahan moderates on Miss Beeson. He identified Noble John Callahan as those who swindled her. Both Moore and Callahan were convicted of defrauding the Callahans, although the latter was not on trial. He is expected to testify as a government witness.

and McKee, the two principals, are accused as backbones of a nationwide bunco ring which operated in Reno. One of each of the alleged swindlers, the Riverside Hotel, was used for the transference of liquidation of securities for betting on horse racing and the stock market. The hotel, retired Chicago gambler, finished his testimony Monday and introduced a number of witnesses. He said that he had sent him out of the hotel and the swindlers who had him to put up \$150,000 as a large wager on a horse race which he eventually lost, but he was "paid" by drawing a check for the amount on the Chase National Bank. The check later was cashed, however. He also told stories of being swindled by the bunco gang who had him, a retired foreman of a steel mill, and a member of a family, who he is foreman of a factory. Mr. Hermal said that he was entangled with the swindling machine in April, 1924, when he met two operators in the hotel. After the bunco game was played and Mr. Hermal was out of hand over \$25,000, he was told to be on his guard, caution over the last moment. He refused to resort, discussing the matter with the money. He said that some one offered him a check for the next thing he knew, Mr. Hermal was that he was off to a train. His money was gone and he could give no explanation.

will continue at 10 a. m.

Senior Stamp Design
Announced by Farley

Will Be Placed on Sale

And one of its features is that the patrons don't have to pay anything for drinking water. A veterinarian paid for its construction

Beam to Kill Army at 200 Miles, Tesla's Claim on 78th Birthday

(Continued from page one)

are built. He said that at some date soon he expected to make the full details public in scientific journals or before scientific bodies. Since he considers the beam of force a defensive and, therefore, a pacifist weapon, he hopes to be able to present it in full for the first time at the disarmament conference at Geneva. He also said that minor parts of each of the discoveries are still in the theoretical, or blueprint stage, but he pointed out that his method of work has almost always been purely mental.

Inventor Reviews Past

The aging inventor, a tall, thin, almost spiritual figure in the sort of brown suit and white shirt that older men wore before the World War, received interviewers in one of the public rooms in the Hotel New Yorker, where he lives. Before he would speak of his present work, he reviewed his past achievements, which entitled him, more than Edison, Steinmetz or any other, to be called the father of the power age. He has 30 patents to his credit, and not a few of them are for epoch-making discoveries, but over and over again he has been ridiculed as a lunatic. He recalled this and his work together as if to prepare the way for his announcements.

He came to the idea of a beam of force, he said, because of his belief that no weapon has ever been found that is not as successful offensively as defensively. "The perfect weapon of defense, he felt, would be a frontier wall, impenetrable and extending up to the limits of the atmosphere of the earth.

Creates Rays in Free Air

Such a wall, he believes, is provided by his beam of force. It is produced by a combination of four electrical methods or apparatuses. First and most important is a mechanism for producing rays and other energy manifestations in free air. Hitherto vacuum tubes have always been necessary. Second is an apparatus for producing unheard-of quantities of electrical current and for controlling it when produced. The current is necessary as power for the first mechanism. Without this, no rays of sufficient strength could be produced. The third is a method of intensifying and amplifying the second process, and the fourth is a method of producing "immense electrical repellent force."

"These four inventions in combination enable man to loose in free air forces beyond conception," Dr. Tesla remarked mildly. "By scientific application we can project destructive energy in thread-like beams as far as a telescope can discern an object. The range of the beams is only limited by the curvature of the earth. Should you launch an attack in an area con-

most positive accuracy. Like many other things I have done they require no previous experiment, once they are properly conceived. There are a few details to be finished—my calculations might be perhaps 10 per cent off at present—and then the whole thing will be presented to the world. It has always been my practice to give the world a sort of preview of what I am doing so that a reception is prepared."

Power Supply Unlimited

"I should also say, and this is perhaps as important as anything else about it, that in this apparatus all limitations as to electric force and the quantity of electricity transmitted have been removed."

It was evident that Dr. Tesla's work on the force beam as a peace-time means of power transmission was far less advanced than his work on it as a defensive weapon. He did not describe the nature of the receiver which will transform the force beam into useful power, though he declared that he had designed one, nor was he able to show just how the dangers of having such death-dealing but invisible beams, traveling through the air, could be surmounted.

Dr. Tesla was far less definite in his description of the experiments which led to his revolutionary prediction of the future of the sun and its system than he was when talking of the force beam. He had, he said, detected "certain motions in the medium that fills space, and measured the effects of these motions." The results of the experiments had led him, "inescapably" to the conclusion that such bodies as the sun are taking on mass much more rapidly than they are dissipating it by the dissipation of energy in heat and light.

"Heat to Kill All Peoples"

He pointed out that his theory means a future for the earth as different from the general belief as the future of the sun. It is generally held that life on the earth will cease when the sun grows so cold that the earth temperature drops to a point where life can no longer be supported. Dr. Tesla prophesies that life on the earth will come because the planet will grow too warm to support life, and he believes that life will then begin on outer planets now too cold. He said that his discovery not only allowed him to predict a very different future for the heavenly bodies from that now generally expected for them, but also to calculate in a new way their age.

Nor were these two discoveries, of a force beam and a new future for the universe, the only new things Dr. Tesla had to offer. The completely new and unlimited source of energy which he stated he was at work on is, he said, still under examination by him. Since he first spoke of it great strides have been made, and the complete announcement of it is to be expected in a comparatively short time.

Finally there was the electric bath.

poliomyelitis, has, it is believed, the most important discovery in aid of science's peruer against the disease. While Dr. Aycock hastened to stress that the discovery regarding inherited susceptibility no way resembles a "cure," he believes that this new fact concerning the disease will permit a promise of attack.

"It may indicate," said Dr. Aycock, "that some organs are unsuited to the work necessary to combat poliomyelitis virus and it may be if it can be identified that it can be remedied. Or, 'he' 'It may enable us to select relatively small proportion of susceptibles from the many and protect them by extraordinary precautions for general application."

20 Per Cent Had Family History

An intensive study, Dr. Aycock, resulted in the discovery that 20 per cent of those treated had a family history of the disease. In isolated communities in Vermont, Walesfield, Barton and Grand Isle, still stronger evidence was found that susceptibility is hereditary for 20 per cent of the patients treated in family history.

Studying children that had contracted the disease, then waiting while they grew up and had children of their own, Dr. Aycock was able to trace the disease through generations, an essential in the hereditary theory. Whole families also were studied. In one family paralysis was found in as many as four generations of a single family. In another nineteen cases covered in a single family period of forty years.

During the tests particular attention was taken to eliminate the possibility that the disease had been transmitted by infection or contagion. "On the basis of the fact that such cases might be traced out of an infected house, or from a person to a person, cleanliness," says Dr. Aycock, "the further fact, one of a number of cases in which one child was stricken in a family, and another in Scotland and one of the children was a victim after the family had moved to Massachusetts.

"Another chart," he said, "shows a record of a case in Massachusetts where another member of the family who had never seen the first child lived in Italy also contracted the disease." That the disease spreads from one generation to the next, presumably possessing the same susceptibility is explained by Dr. Aycock in that not every child is susceptible tested by the virus.

May Aid Use of Serum

The nature of the fight, in this discovery, has not been determined as yet, but the discovery offers additional possibilities for the use of serum. The value of the fight has thus far not been definitely proved, but is Dr. Aycock's belief that future work on this will be greatly aided by the discovery.

Dr. Aycock summarizes the advance in research as follows:

"1. It tells us a piece of truth about the disease. It tells us that a relatively small proportion of the population are susceptible from the many and protect them by extraordinary precautions too drastic for general application. To close schools is a drastic measure any event unless gathering children outside of school."

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Dr. Tesla declared that the two most important of the four devices involved in his force beam generator, the mechanism for producing rays in free air and the mechanism for producing great quantities of electrical current, had both been constructed and demonstrated by actual experiments. The two intensifying and amplifying apparatuses are not yet in existence, but he displayed the most perfect confidence that when they are, they will work as he expects them to do.

"These effects," he said, "are of the kind that can be calculated with the

He smiled again. The white parchment skin, drawn tight over a finely built bony structure, creased round his eyes and mouth. He admitted to being a little thinner than last year, but, he explained, every one dries up as time goes on, and there is nothing in being thin that can interfere with work.

He was asked a question about birthday celebrations and congratulations. He had received congratulations from all over the world, he said, but the one which pleased him most was from his sister in Yugoslavia, Mrs. Marica Kosanovic, who is three years younger than he and "the smartest in all our family." He talked for a while of his family, recalling all the inventors there were—five recorded—and students in his ancestry.

"As for celebration," he added, "my only celebration is a little work, and these small disclosures of results."

"It may indicate that some one is unable to do the work necessary combat the poliomyelitis virus and may be that if it can be identified the trouble can be remedied."

Commissioner O'Ryan said he would take up with James E. Flanagan, Civil Service Commissioner, the advisability of "conferring on the recipients of the medal at cross an award of half a point on their Civil Service rating, as is done for the recipients of the other decorations. The new medal was selected by a committee made up of the Police Commissioner, Harold Fowler, Harold L. Allen and Martin H. Meaney. First, Second and Fifty Deputy Commissioners, respectively; and Alan R. Stuyvesant, secretary to the Police Commissioner.



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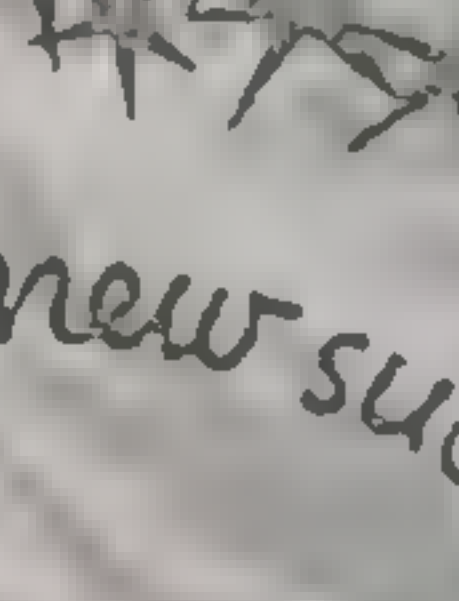

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The case of Aaron Sapiro, attorney, and Sam Roth, charged with trying to influence a jury, was placed on the trial calendar for August 8 by Judge Murray Hulbert in United States District Court yesterday. The defendants are charged with misconduct in connection with the trial of Sidney Paris, Murray C. Harwood, and others, for selling stock through fraudulent use of the mails. Sapiro is under \$1,000 bail and Roth \$2,000, pending trial.

Irene Mosson, thirty years old, of 114 South Street, Easton, Pa., was found dead of poison last night in her room at the Hotel Wellington, Seventh Avenue and Fifty-first Street, an empty vial by her side. She had come here a week ago to seek work. She left a note to a sister, Miss Marie Mosson, of 178 Dean Street, Brooklyn, a registered nurse, who went to the hotel and identified the body.


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Tesla's Wireless Power Dream Nears Reality

Boise City, Okla., April 1 (U.P.).— Nikola Tesla's forecasts of commercial transmission of electric

power without wires tonight appeared near realization.

Equipment was being made ready for a test run of a motor car over a stretch of railway track to Farley, N. M., with power supplied by radio. Success would open an ultra-

Nikola Tesla.

modern system of transportation. The run is expected to be made as soon as the most efficient mechanical method is determined for transferring energy from the radio-

impelled motor to the car drive wheels.

Test runs in the Santa Fe Railway yards here during the week recalled the experiments Tesla began thirty years ago with wireless transmission of signals and power. Equipment developed the equipment, however.

Plans Wireless Hydro-Electric

Tesla, the Serbian-American electrical genius, produced incandescent effects in lamps without filaments in 1903 and performed other weird feats without wires. Now, almost 77, he still is experimenting in New York and has designed a plant for wireless transmission of hydro-electric power, which he proposed should be erected at Niagara Falls.

Details of how the radio-powered motor car equipment works are

closely guarded secrets, but were understood to involve use of high frequency current and short wave radio with receiving elements similar to those in television sets.

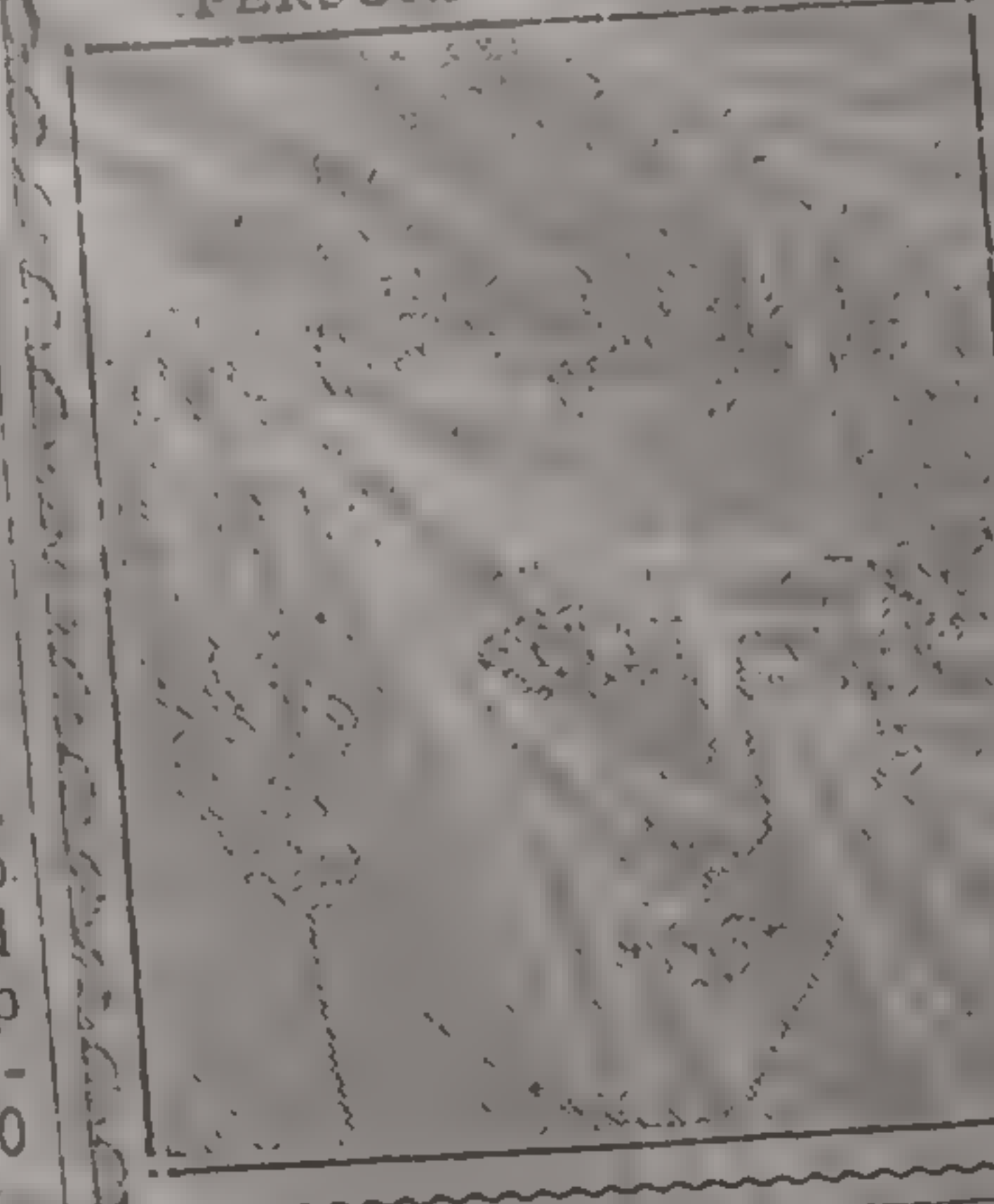
Predicts New Home Machinery

Use of high frequency currents was the basis of Tesla's phenomenal early experiments which led him to predict that some day houses would be lighted and electric machinery run without wires connecting them to power plants.

An odd-looking set of electrical and gasoline motored apparatus, including a high-powered radio transmitter with big coils and short antenna, has been set up here to waft current to the specially-motored car for the run of 30 to 40 miles.

CHEAP CHAMPAGNE
Champagne cocktails reached a new low post-repeal price yesterday when the Hotel Roosevelt sold them for 50 cents at the bar. The announced aim was to push American champagne.

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[illegible]

It will now be seen how a large and very heavy body, such as a loaded railroad car or locomotive, can be lifted by the tornado and transported to considerable distances. American locomotives, which are the biggest in the world, may have a length of 66 and a width of 11½ feet, presenting thus 750 square feet of horizontal projection. At the moment the wheel strikes the track, the wheels, connections and other details under the main body arrest the motion of the car, and the air pressure of 118 pounds per square foot in excess of that of the atmosphere. But as determined above, owing to the vacuum, a pressure difference of four inches of mercury (which is 1.33 pounds square inch or 284 pounds per square foot) is maintained within the whole difference of pressure between the spaces under and above the locomotive $284 \times 138 = 4.6$ pounds per square foot. The total upward push exerted on the exposed area of 750 square feet is thus 323,760 pounds, which is much more than the weight of such a locomotive (estimated at 220,000 pounds when fully equipped for service).

Ordinarily, the weight should be much smaller; and one can readily see that the vehicle may be instantly raised in a spiral, accelerated, and hurled away tangentially to great distance. The average person may be surprised that an insignificant vacuum is sufficient for so stupendous a display of force; but the figures afford an unmistakable proof. I may add that I have assumed minimum values which will be, in all probability, greatly exceeded.

The constant fear of danger from tornadoes and the great losses of life and property which they cause in certain parts make it very desirable to find some means of effectively combating, if not preventing them. Whenever man attempts to interfere with the order of things determined by immutable laws, he finds that his efforts are utterly insignificant when compared with the vast movements of energy in Nature.

One of the greatest possible achievements of the human race would be the control of the precipitation of rain. The sun raises the waters of the ocean and winds carry them to distant regions, where they remain in a state of delicate suspension until a relatively feeble impulse causes them to fall to earth. The terrestrial mechanism operates much like an apparatus releasing great energy through a trigger or priming cap.

If man could perform this relatively trifling work, he could direct the life-giving stream of water wherever he pleased, create lakes and rivers and transform the arid regions of the globe. Many means have been proposed to this end, but only one is operative. It is lightning, but of a certain kind.

More than 35 years ago, I undertook the production of these phenomena and, in 1899, I actually succeeded, using a generator of 2,000 horsepower, in obtaining discharges of 18,000,000 volts carrying currents of 1,200 amperes, which were of such power as to be audible at a distance of 13 miles. I also learned how to produce just such lightnings as occur in Nature, and mastered all the technical difficulties in this connection. But I found that even the small,

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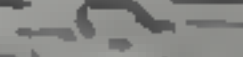
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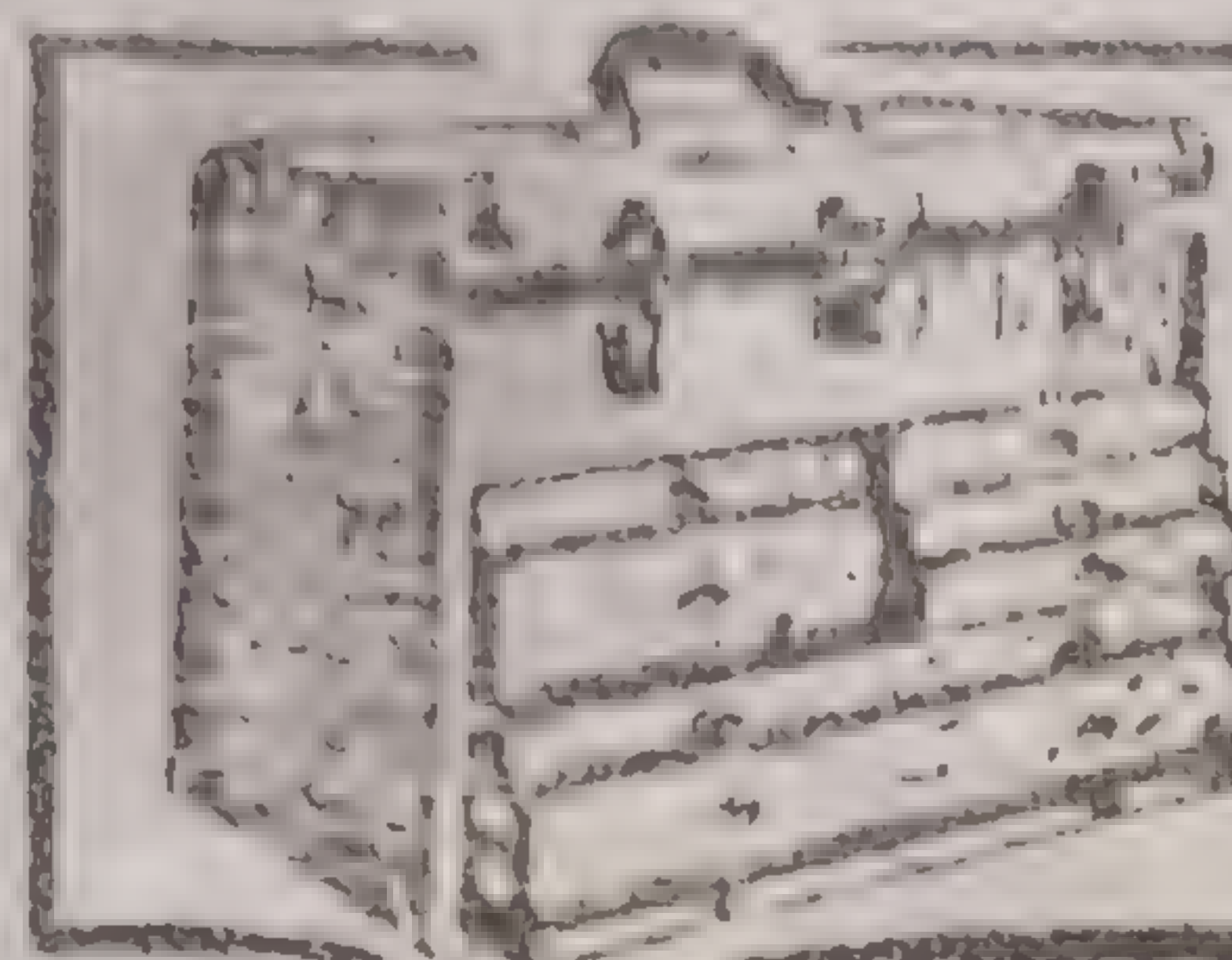
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wards which it leaves, in the direction of the opposite side where the reverse condition exists. It is well to remember this in such a storm. If the observer sees a leaning funnel, he is in no immediate danger, but if the funnel appears straight he should run for shelter at once.

It will now be easy to show how a large and very heavy body, such as a loaded railroad car or locomotive, can be lifted by the tornado and transported to considerable distance. American locomotives, which are the biggest in the world, may have a length of 66 and a width of $11\frac{1}{2}$ feet, presenting thus 760 square feet in horizontal projection. At the moment the whirl strikes the vehicle, the wheels, connections and other obstacles under the main body arrest the motion of the air, causing a static pressure of 138 pounds per square foot in excess of that of the atmosphere. But as determined above, owing to the vacuum, a pressure difference of four inches of mercury (that is, two pounds per square inch or 288 pounds per square foot) is maintained, making the whole difference of pressure between the spaces under and above the locomotive $288+138=426$ pounds per square foot. The total upward push exerted on the exposed area of 760 square feet is thus 323,760 pounds, which is much more than the weight of such a locomotive (estimated at 280,000 pounds when fully equipped for service).

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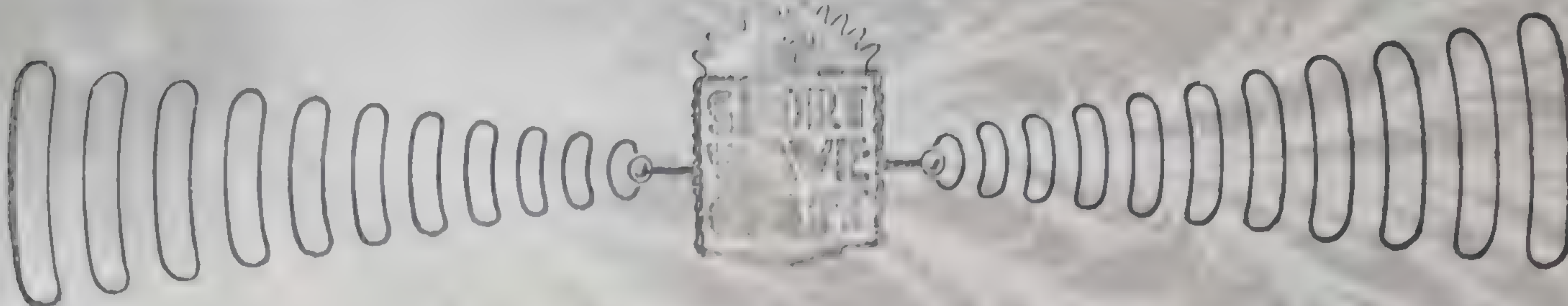
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Articles - 1933

HUGO GERNSBACK, EDITOR

WINFIELD SECOR, MANAGING EDITOR



Unknown Short Waves

An Editorial By HUGO GERNSBACK

WE ARE apt to talk quite glibly about short waves—day in and day out. We use the instrumentality of short waves to receive music and talk from the Antipodes, and we use them for dozens of our other requirements, day in and day out; but, when it comes to the waves themselves, practically nothing is known about them! They are still a book sealed tight with seven seals.

So far, most of our experimental and research work has been concerned with the generation and the effect of short waves; but what happens to these waves between the transmitting antenna and your receiving set is still a deep mystery.

While we know in a general way that waves are reflected by the so-called Kennelly-Heaviside and Appleton layers, which gives rise to "skip effects," very little is known on the side of this fact. We do know that the upper rarefied atmospheric strata reflect the radio waves, somewhat as a curved mirror would reflect light; still, this statement does not always hold true either, and other things are happening, most of which we do not understand as yet.

For instance, only recently, Signor Marconi on his yacht "Electra" did some constructive experimental work upon a 3/5-meter band. Normally, the effect of such a wave should not go beyond the horizon; because at these ultra-short wavelengths, as scientists think, the waves assume the physical characteristics of light, and therefore cannot go beyond the horizon, any more than a searchlight can go around the curve of the earth.

It is true that, as Marconi pointed out, light waves suffer a certain amount of refraction; so that you actually can see them a little below the horizon, but not much. This, however, does not explain how Marconi could send and receive short waves over a distance of 160 miles, when a light beam would not go more than fifty miles at the most.

We are, therefore, face to face with a new mystery of short waves; since they do not seem to behave "according to Hoyle." Something else happens here that we do not understand. The chances are that at this point our good friend Dr. Nikola Tesla steps into the breach. For many years, this illustrious savant, the most distinguished living inventor of today, has claimed that all radio transmission, whether on long or short waves, is not done by free waves in space at all, but that it is done by currents transmitted through the earth! Asked by me some years ago, how he explains transmission from an airplane to the ground,

Tesla stated that this is nothing but a condenser or capacity effect, wherein the ground was one plate and the plane another. This is not at all illogical, when it is considered that submarines can send and receive radio messages while totally submerged; always providing that their aerials are highly insulated and are not short-circuited by the salt water. The same is the case in exploration of the deepest caves that have, as yet, been reached by man. There is no trouble in signalling to these caves, and transmission and reception is always remarkably easy.

When Marconi, therefore, now transmits ultra short waves beyond the horizon, you may be sure that the ground effect, or the so-called ground-wave, has a lot to do with it; and future experimental and scientific research into this field will no doubt affirm or reject the theory.

There is still a tremendous amount of experimental work to be done in the exploration of radio waves. It has always been a source of wonder to me why short-wave experimenters have not tried their hand at "underground reception." This means of reception was first tried out on a large scale by the late Dr. James Harris Rogers of Hyattsville, Md. All during the war, by means of buried insulated cables, which rested in trenches anywhere from 3 to 6 feet below the surface of the earth, Dr. Rogers was able to receive regularly European stations, with an almost total absence of static. He could even receive such stations when a thunderstorm was raging overhead!

For those experimenters who reside in the country, I would suggest that they try their hand at underground reception for short waves. The trick is rather simple; all that is necessary is to bury a rubber-covered wire in the ground, after digging a trench some 20 to 50 feet in length, and then cover the cable. This then is your new aerial. It should even be possible, today, to use a transposition aerial with two feeder lines running in each direction, and bring the twisted cable into the set. This would do two things: it would no doubt improve reception, and it would certainly do away with a lot of natural static as well as "man-made" static.

Here is an extremely interesting field for the experimenter who wishes to accomplish something worthwhile and who wishes to leave the beaten track. The editors would be pleased to hear from those who have made experiments in short-wave underground reception, and the results will, of course, be published for the benefit of all.

SHORT WAVE CRAFT IS PUBLISHED ON THE 5th OF EVERY MONTH

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Acting to President Roosevelt, who soon will meet with Maxim Litvinoff, Soviet Commissar for Foreign Affairs.

TESLA CLAIMS MACHINE TO TAP COSMIC ENERGY

Continued from First Page.

years of laboratory search and scientific experimentation have been disposed of.

"I shall not announce the scientific principles of the discovery and describe the mechanical means I have devised for carrying it out, for the present. It is sufficient at this time to say that I have performed experiments and obtained results from which I am able to calculate what the mechanism may be expected to perform. Much, of course, remains to be accomplished, but it is work not necessarily of a creative kind; it can be done by many, and hence development to the point of actual operation may be enormously speeded up.

"WILL FLO WAT NIGHT."

"Night will not interrupt the flow of the new power supply. The disappearance of the sun below the horizon will not shut it off.

"The central-plant engine which will mechanize the cosmic energy and shoot it electrically to the other side of the world or the other side of the street will operate on an entirely new principle, and will develop hundreds of thousands of horsepower.

"Any number of such central plants can be built, so there is no limit to the volume of power which it will be possible to develop for the turning of machinery—for the running of trains and automobiles, the driving of ships, the operating of factories, the myriad different motor tasks now performed by engines and machines which derive their power from the regular fuels of industry.

CITES "ABSURD REPORT."

"My statement of this discovery and invention, the result of nearly a third of a century of scientific toil, should serve to quiet the absurd report which has got about that I have perfected a portable engine which by extricating atomic energy will drive the largest steamship across the ocean. I have smashed probably trillions of atoms, and have definitely determined that they contain no available energy. The theory that they do is a futile dream. But the new cosmic power, the harnessing of the energy of the universe to the machinery of men, that is not a dream."

—World of Science Lists Dr.

type of persons placing Situation. If you are in need of an able office help refer to these columns.

N.Y. AMERICAN

NOV. 1, 1933

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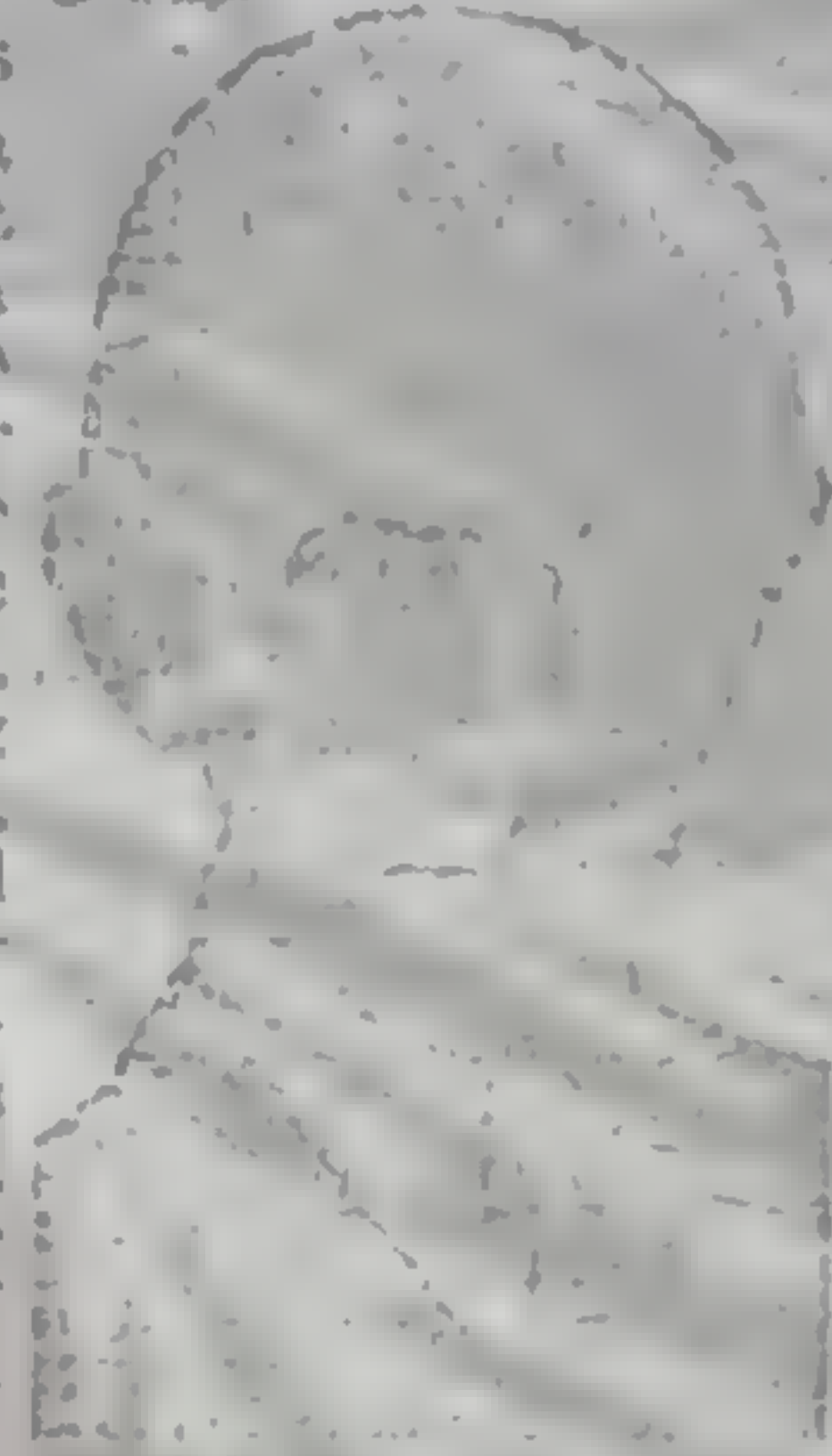
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Device to Harness Cosmic Energy Claimed by Tesla

Predicts New Power Will Soon Displace All Present Fuels; Could Be Wirelessly.

Nikola Tesla, the celebrated physicist, recognized in the scientific world as the foremost living inventor,

announces that "at a date not distant" a new source of power will be available everywhere, displacing coal, oil, gas, and the other established fuels of industry. The inventor authorizes the statement that the mechanism is designed to revolutionize industry will be, when he presents it as his crowning achievement in the field of applied science, the result of thirty years of search and experimentation into and with the mysterious force which for want of a more precise terminology is called cosmic energy.



NIKOLA TESLA
Sees New Power in Universal Law

"This new power for the driving of the world's machinery will be derived from the energy which operates the universe, the cosmic energy, whose central source for the earth is the sun, and which is everywhere present in unlimited quantities. From the actual mechanical apparatus which I have developed for utilizing this energy, the power to drive engines and machines can be transmitted, either by wire or by my wireless system, as preferred, from central plants which may be located wherever desired, to any point on the globe, whether on land or sea. When the new power becomes commercially available, there will be no further necessity for depending on coal, oil, gas, or any other of the common fuels.

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"NEED NOT BE DISTANT."

"Because no man can foretell with assurance how swiftly or how tardily a revolutionizing scientific discovery and its mechanical complement will be commercially introduced, it is impossible for me to say how soon the new universal power will be in use. The time, however, need not be distant. The scientific uncertainties and mechanical difficulties with which I have dealt through thirty

Continued on Page 5, Column 1.

Board Approves Contract for Dam

OLYMPIC, Wash., Oct. 31 (AP). The Columbia Basin Commis-

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Tremendous NEW POWER soon to be unleashed

By Carol Bird

Nikola Tesla, Starting His 78th Year, Works on Revolutionary Power Project and Also Is Completing Process for Photographing Thought

THEORY that a man's accomplishments will not diminish with age is being tested by Nikola Tesla, inventor, engineer, and the world's leading electrical expert, who, on his 77th birthday, is working on three or four projects.

One of them, the invention of a new system of energy, is being called upon as "miraculous" by Mr. Tesla's associates. The other two theories have been called "impossible" by a "medium."

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"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects now going on all over the world which will eventually double that amount. But, unfortunately, there is not enough waterpower to satisfy present needs, and everywhere inventors and engineers are endeavoring to unlock some additional store of energy."

WILL the smashing of the atom lead to this new power energy? Let Mr. Tesla answer:

The public is naturally led to expect a great revolution through the harnessing of atomic power, but that is an illusion. Atomic energy is not available for work. I operated many years ago apparatus of a capacity of 2000 horsepower and tension of 18,000,000 volts with which trillions of atoms were smashed in a fraction of a second. I expected all sorts of intense and dramatic effects, but found no trace of any effect which should have been liberated through the shattering of atomic structure, according to theory. For the last thirty years I have warned my fellow men that there is nothing to be expected in this field except some minor effects due to changes in the atomic structure which may have more or less effect.

He is adding that the new form of energy which he has been investigating many years would be available at any time in the world in unlimited quantities, and that the machinery for harnessing it would last more than 800 years. Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic, which stirs the imagination and which, doubtless, will sound too revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

"I expect to photograph thoughts," announced Mr. Tesla calmly, in the same tone of voice that a person occu-

pied with some trivial things in the scheme of life might announce that it was going to rain.

Continued Mr. Tesla: "In 1893, while engaged in certain investigations, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time."

"My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. These two retinas were to be constructed somewhat after the fashion of a checker-board, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth."

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—a scanning apparatus or a cathodic ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period."

"Now if it be true that a thought reflects an image on the retina, it is a mere question of illuminating the same properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen."

If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of subscribers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

After a discussion of his new scientific findings, Mr. Tesla turned to the subject of his personal source of energy and what he considers the real values of life.

"One of the most fundamental and

also one of the saddest facts in human life is well brought out in a French proverb which, freely translated, means: 'If Youth had the knowledge and Age the power of doing,'" said Mr. Tesla. "Our condition of body and mind in old age is merely a certificate of how we have spent our youth. The secret of my own strength and vitality today is that in my youth I led what you might call a virtuous life."

"I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding while still young that I must control my passions and appetites if I wanted to make some of my dreams come true."

"So with this in view, quite early in life I set about disciplining myself, planning a program of living for

what I considered the same and worthwhile life."

"Since I love my work above all things, it is only natural that I should wish to continue it until I die. I want no vacation—no success from my labors. If people would select a life work compatible with their temperaments the sum total of happiness would be immeasurably increased in the world. "Many are saddened and depressed by the brevity of life. 'What is the use of attempting to accomplish anything?' they say. 'Life is so short. We may never live to see the completion of the task.' Well, people could prolong their lives considerably if they would but make the effort. Human beings do so many things that pave the way to an early grave."

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"My regime for the good life and my diet? Well, for one thing, I drink plenty of milk and water."

"Why overburden the bodies that serve us? I eat but two meals a day and I avoid all acid-producing foods. Almost everybody eats too many peas and beans and other foods containing uric acid and other poisons. I eat a liberal diet of fresh vegetables, but no meat at all, and I eat only what is reputed as the brain food, but has a very strong acid reaction, as it contains a great deal of phosphorus. As to the far the worst element in diet is alcohol."

"Potatoes are splendid and should be eaten at least once a day. They contain valuable mineral salts and are not a thing."

"I believe in plenty of exercise. I walk eight or ten miles every day, and never take a cab or other conveyance when I have the time to do the journey. I also exercise in my bath daily for I think this is of great importance. I take a warm bath followed by a prolonged cold shower."

"Sleep? I scarcely ever sleep. I come of a long-lived family, but it is noted for its poor sleepers. I expect to watch the records of my ancestors and live to be at least 100."

"MY SLEEPLESSNESS does not worry me. Sometimes I doze for an hour or so. Occasionally, however, once in a few months, I may sleep for four or five hours. Then I awaken naturally charged with energy, like a battery. Nothing can stop me after that a night. I feel great strength then. There is no doubt about it but that sleep is a restorer, a vitality, that it increases energy. But on the other hand, I do not think it is essential to one's well-being, particularly if one is habitually a poor sleeper."

"Today, at 77, as a result of well-regulated life, sleeplessness notwithstanding, I have an excellent certificate of health. I never felt better in my life. I am energetic, strong, in full possession of all my mental faculties. In my prime I did not possess the energy I have today. And what is more, in solving my problems I use but a small part of the energy I possess, for I have learned how to conserve it. Because of my experience and knowledge gained through the years, my tasks are much lighter. Contrary to general belief, work comes easier for older people if they are in good health. It is as if we have learned through years of experience how to arrive at a given place by the shortest path."

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Tremendous NEW POWER soon to be unleashed

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Mr. Tesla is the father of the alternating current of power transmission and radio, the induction motor and Tesla coil.

Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will be maintained, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unavailable, to be developed through fundamentally novel machines of my invention."

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical point of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing."

My power generator will be of the best kind—just a big mass of steel and aluminum, comprising a stationary rotating part, peculiarly designed. I am planning to develop and transmit it to a distance. The direct-current system now universal also can be employed if the considerable difficulties of transmission lines can be

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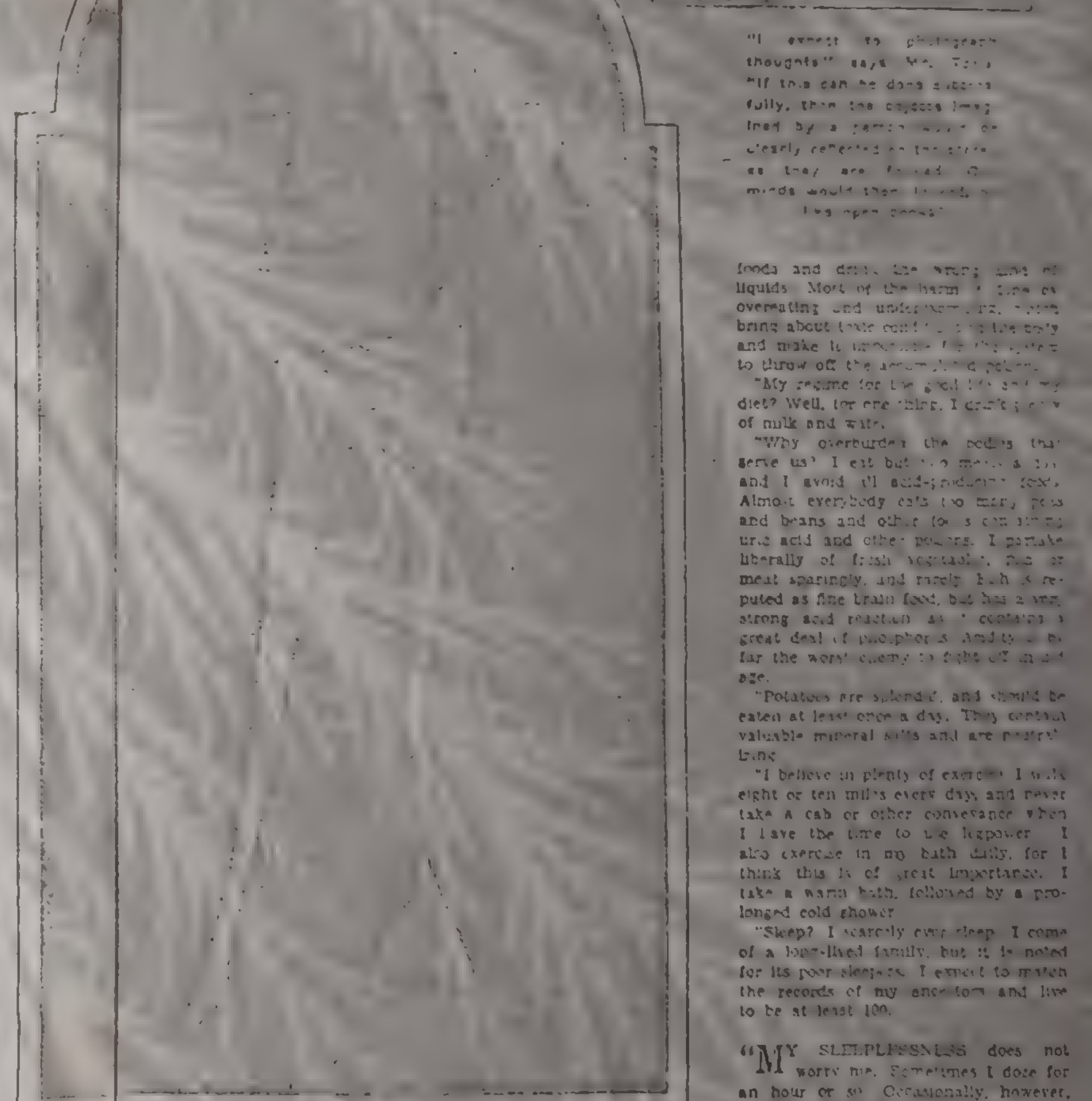
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Nikola Tesla, dean of American inventors, with numerous triumphs in electrical engineering behind him, as he looked on his 77th birthday, which he recently celebrated

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"Today, at 77, as a result of well-regulated life, sleeplessness notwithstanding, I have an excellent certificate of health. I never felt better in my life. I am energetic, strong, in full possession of all my mental faculties. In my prime I did not possess the energy I have today. And what is more, in solving my problems I use but a small part of the energy I possess, for I have learned how to conserve it. Because of my experience and knowledge gained through the years, my tasks are much lighter. Contrary to general belief, work comes easier for older people if they are in good health, because they have learned through years of experience how to arrive at a given point in the shortest path."

Great scientific projects.

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NIKOLA TESLA, tall, lean, with the face of an ascetic and deep-set eyes, whose expression denotes concentration on a canvas of work too big for most people's comprehension, partially described a new and inexhaustible source of power he has discovered after years of research, revolutionizing modern physical science. At the same time he touched on his own reservoir of energy which makes such monumental discoveries possible at his advanced age.

How does he tap both these deep wells? What is the secret of fine health, keen mind, unusual vitality and mental force at 77, the time of life when most men are sitting in the sun with shawls over their knees or, alas! lying beneath the sod?

Mr. Tesla is the father of the alternating system of power transmission and radio, the induction motor and Tesla coil.

Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will, he maintains, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unavailable, to be developed through fundamentally novel machines of my invention.

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical point of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing.

"My power generator will be of the simplest kind—just a big mass of steel, copper and aluminum, comprising a stationary and rotating part, peculiarly assembled. I am planning to develop electricity and transmit it to a distance by my alternating system now universally established. The direct current system could also be employed if the heretofore insuperable difficulties of insulating the transmission lines can be overcome.

"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects

Revolutionary Power Project and Also Is Completing Process for Photographing Thought

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WILL the smashing of the atom lead to this new power energy? Let Mr. Tesla answer:

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Beyond adding that the new form of energy which he has been investigating many years would be available at any place in the world in unlimited quantities, and that the machinery for harnessing it would last more than 5,000 years, Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic, which stirs the imagination and which, doubtless, will sound too revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

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Continued Mr. Tesla: "In 1893, while engaged in certain investigations, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time."

"My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. These two retinas were to be constructed somewhat after the fashion of a checker board, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth.

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—a scanning apparatus or a cathodic ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period.

"Now if it be true that a thought reflects an image on the retina, it is a mere question of illuminating the same properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen.

"If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of subscribers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

After a discussion of his new scientific findings, Mr. Tesla turned to the subject of his personal source of energy and what he considers the real values of life.

"One of the most fundamental and also one of the saddest facts in human life is well brought out in a French proverb which, freely translated, means: 'If youth had the knowledge and age the power of doing,'" said Mr. Tesla. "Our condition of body and mind in old age is merely a certificate of how we have spent our youth. The secret of my own strength and vitality today is that in my youth I led what you might call a virtuous life.

"I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding while

still young that I must control my passions and appetites if I wanted to make some of my dreams come true.

"So with this in view, quite early in life I set about disciplining myself, planning out a program of living for what I considered the sane and worthwhile life.

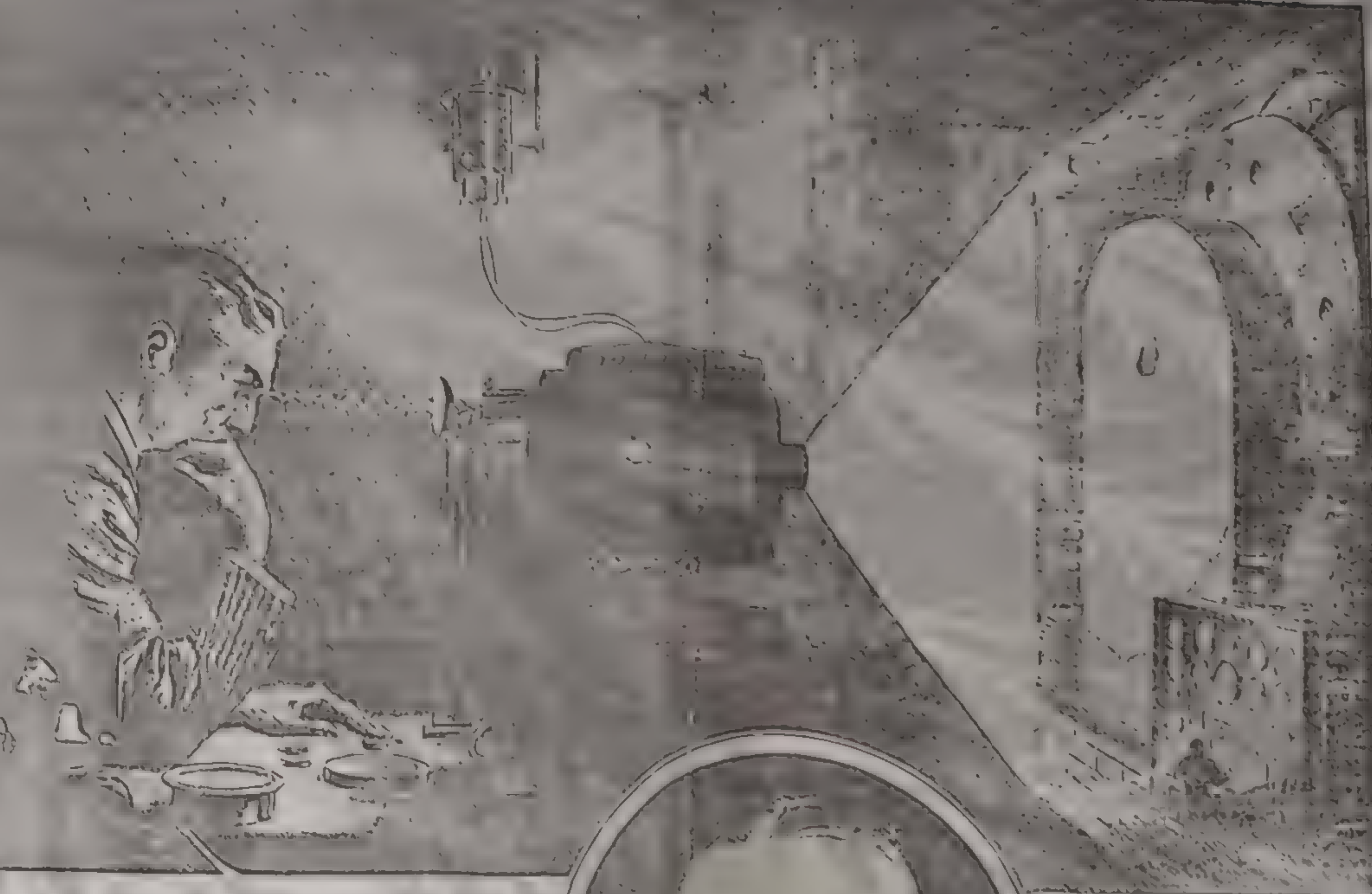
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Tesla seems on the verge of something stupendous! — Morris

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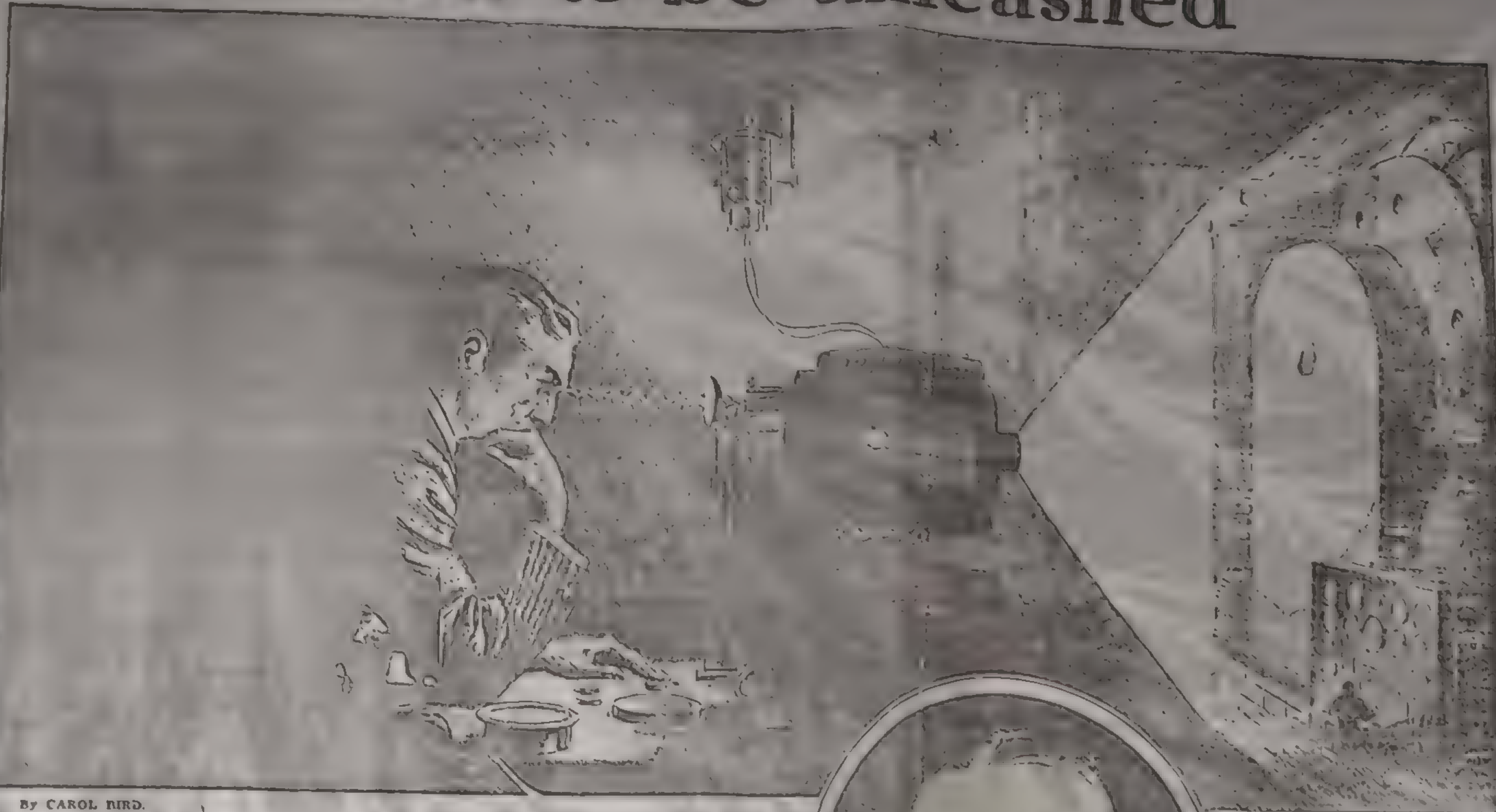


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... on Springfield and
... Lake
Oriskany, the largest artificial
water lake in the world an
... the lake capital to
the above place at Kingston

Journal-Post Pattern

Tremendous NEW POWER soon to be unleashed



By CAROL RIRD.

PROVING his theory that a man's efficiency and accomplishments should increase and not diminish with mellow age, Nikola Tesla, inventor, physicist and one of the world's leading electrical technicians, enters his seventy-eighth year today, engaged on three or four great scientific projects.

Several of these inventions and discoveries will be looked upon as "miracles" by many people, for Mr. Tesla has long been a scientist years ahead of his time, one whose advanced theories have alternately stamped him a "madman" and a wizard.

Just as people ridiculed Copernicus' theory of the planetary system, the unlighted Tesla's pronouncement, years ago, regarding cosmic rays. The pathfinder and the pioneer—and Mr. Tesla is both—are always condemned by the masses.

NIKOLA TESLA, tall, lean, with the face of an ascetic and deep-set eyes whose expression denotes concentration on a canvas of work too big for most people's comprehension, partially described a new and inexhaustible source of power he has discovered after years of research, revealing modern physical science. At the same time he touched on his own reservoir of energy which makes such monumental undertakings possible at his advanced age.

He has been tapping both these deep wells. What is the source of his power? It is his own energy, vitality and mental force. He has been tapping both these deep wells. What is the source of his power? It is his own energy, vitality and mental force.

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"I'll tell the smashing of the atom will lead to this new power energy," Let Mr. Tesla answer. The public is naturally led to expect a great revolution through the harnessing of atomic power, but this is an illusion. Atomic energy is not available for work. I operated many years ago apparatus of a capacity of 10,000 horsepower and ten million of volts with which I generated a stream of alpha rays. I generated rays of intense and destructive rays but found no trace of any energy which should have been liberated through the shattering of atoms. According to the theory, for the last thirty years, I have worried my fellow scientists that there is nothing to be expected in this field except some specific results due to changes in the atomic structure which may have more or less value.

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Nikola Tesla, dean of American inventors, with numerous triumphs in electrical engineering behind him, as he looked on his 77th birthday, which he recently celebrated.

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MANY NEW ROUTES OPENED ACROSS STATE

Fortunately for the people of Kansas City, the new road opened in the state will make the distance from here to the west coast a much shorter one than it has been. The new route will be a direct line from here to the west coast, and will be a much shorter one than it has been.

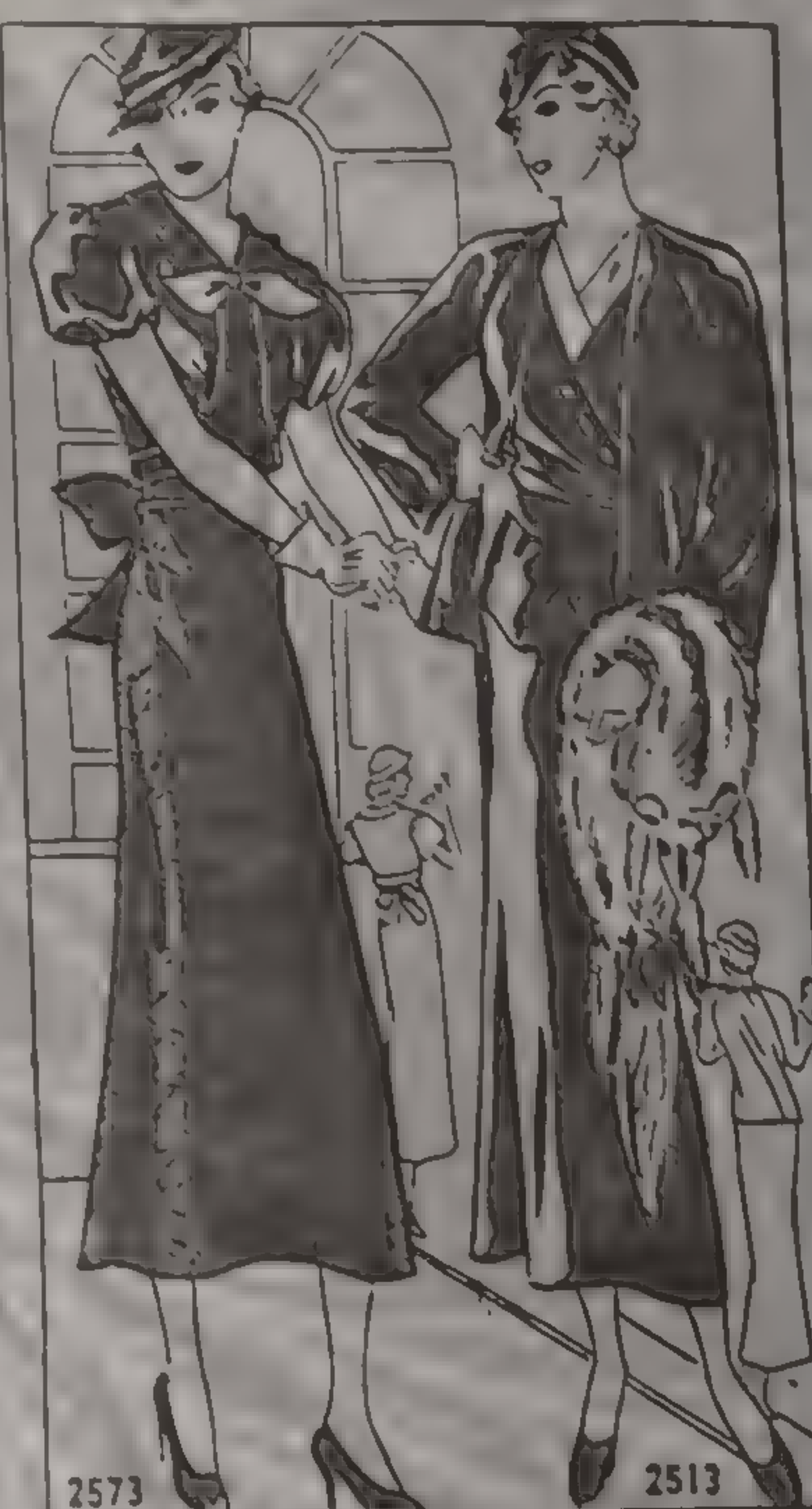
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Journal-Post Pattern



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2513

Need at least one satin dress for the fall and winter. Pattern 2573 is available in sizes 12, 14, 16, 18 and 20. Size 16 takes 3 1/2 yards of 36-inch fabric. Pattern 2513 is available in sizes 12, 14, 16, 18 and 20. Size 16 takes 3 1/2 yards of 36-inch fabric. The Anne Adams Pattern Book features a charming collection of afternoon, sports, golf, tennis, dress, jumps, house frocks, special beginners' patterns, styles for juniors, and lovely clothes for youngsters, and instructions for making a chic sweater. Send for your copy. Price of catalog, 15 cents. Catalog and pattern together, 25 cents. Address orders to Journal-Post, 1234 Main St., Kansas City, Mo.

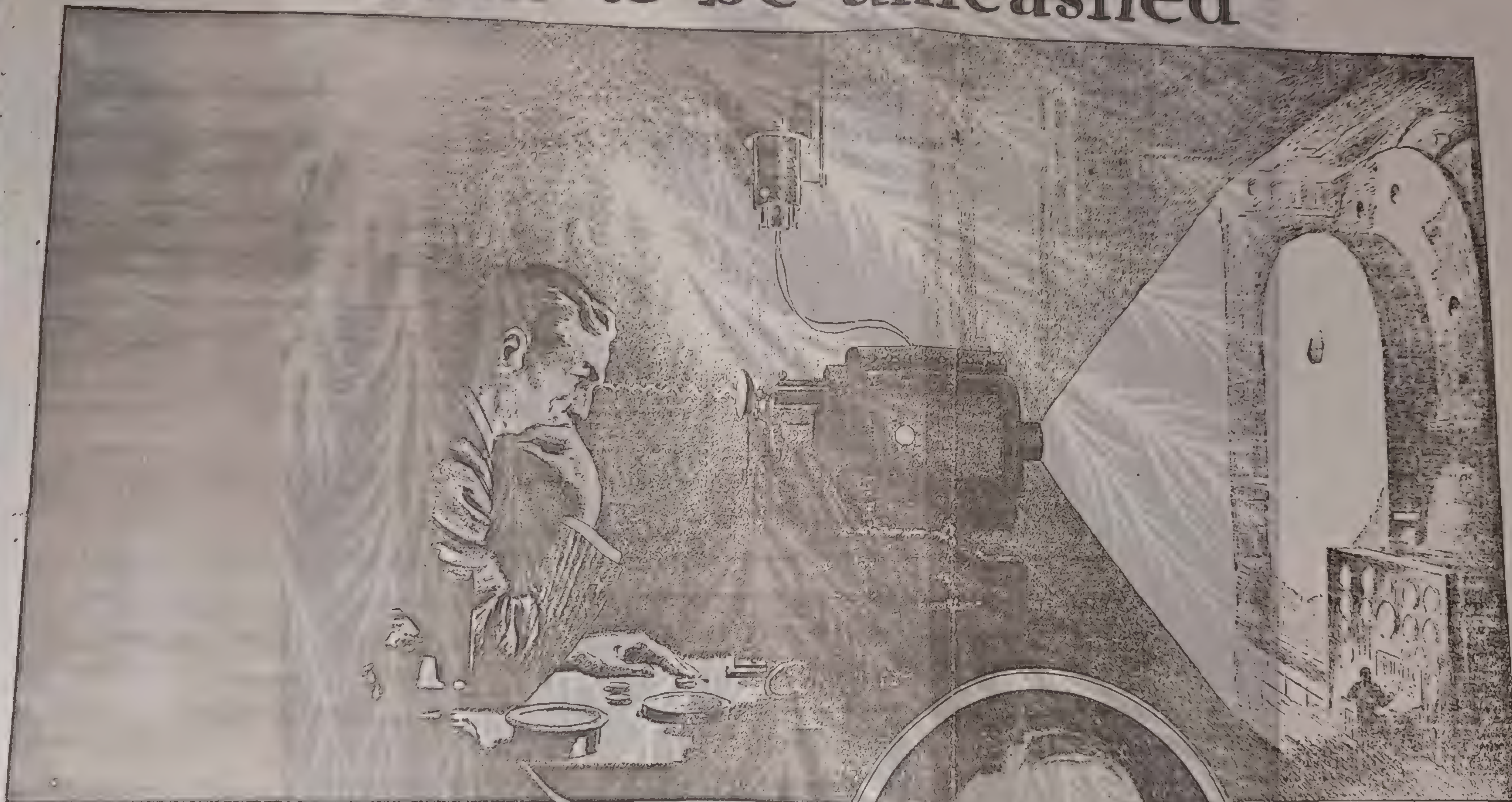
Tesla seems on the verge of something fabulous!

SUNDAY, SEPTEMBER 10, 1933.

KANSAS CITY JOURNAL-POST.

PHONE MAIN 4000

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Newly paved shorter routes make it possible for the tourist to visit many great interest that were previously inaccessible.

A newly opened route from Kansas City to the entire distance in route from Kansas City to Booneville, Colorado, Louisiana has within 500 miles.

People travel through the great state, travel over blue grass prairie, through the great fire brick plant through history, the home of the location of the monument to this through the world in the three of the Mississippi river, the Mississippi Illinois river.

An alternate route through Sedalia fair grounds.

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like the above

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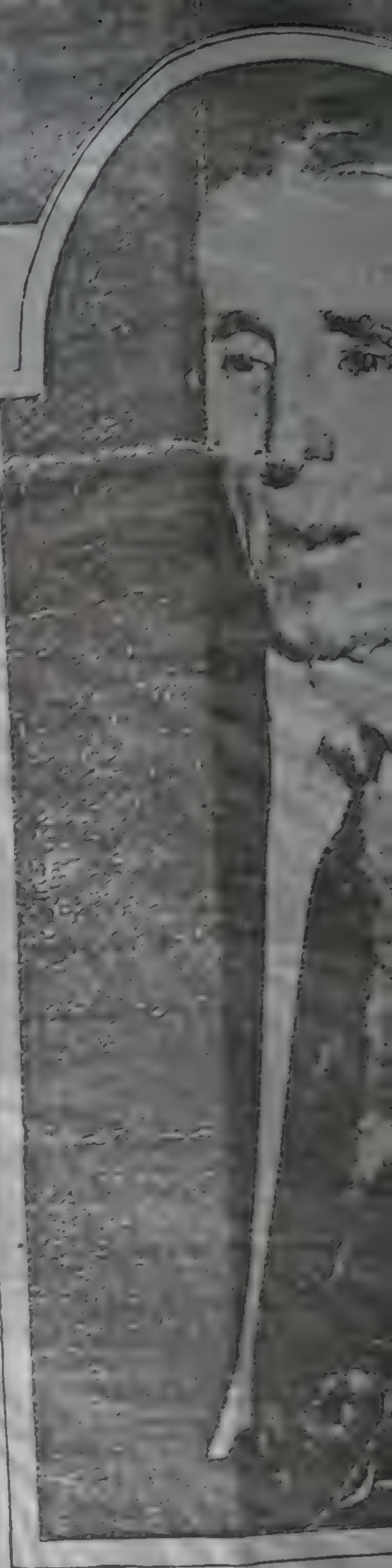
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Fortunately for the people of Kansas City and the Southwest in this Chicago world's fair year, the tremendous progress made by the state highway department of Missouri in the construction of Missouri highways has opened up to the tourist many new and vastly interesting routes across Missouri.

Thousands of tourists from the West and Southwest are, this year, crossing Missouri who have never crossed the state before. Many Missouri cities of great historical interests have been placed directly in the path of the people bound for the Chicago world's fair and the East.

Newly paved highways over shorter routes make it easy for the tourist to visit numerous places of great interest that were heretofore inaccessible.

A newly opened paved route, Kansas City to Chicago, makes it possible to drive an automobile the entire distance in one day, as this route from Kansas City through Boonville, Columbia, Mexico and Louisiana has brought Chicago within 500 miles of Kansas City.

People traveling this route can visit the great University of Missouri, travel over the great upland, blue grass prairies of central Missouri; through Audrain county, with the greatest clay mines and fire brick plants in the world; through historical Bowling Green, the home of Champ Clark and the location of the magnificent monument to this great statesman; through the greatest nurseries in the world in Pike county and across three of the great rivers of the Mississippi valley, the Missouri river, the Mississippi river and the Illinois river.

An alternative route from Kansas City would be over U. S. 50 through Sedalia, the Missouri state fair grounds, to Jefferson City.

Another newly opened route across Missouri from the Southwest comes through Springfield and the famous Ozark hills, over the great Bagnell dam and the Lake of the Ozarks, the largest artificial fresh water lake in the world and on through the state capital to join the above route at Kingdom City.

Journal-Post Pattern



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Asked about his startling new scientific discoveries, one of which concerns the "photographing of thought," which will, he maintains, bring about a tremendous social revolution, he said:

"My first and most important discovery concerns the harnessing of a new source of power, hitherto unavailable, to be developed through fundamentally novel machines of my invention.

"I am not yet prepared to dwell on the details of the project, for they must be checked before my findings can be formally announced. I have worked on the development of the underlying principles for many years. From the practical point of view of the engineer engaged in power development, the first investment will be relatively very great, but once a machine is installed it may be depended on to function indefinitely, and the cost of operation will be next to nothing.

"My power generator will be of the simplest kind—just a big mass of steel, copper and aluminum, comprising a stationary and rotating part, peculiarly assembled. I am planning to develop electricity and transmit it to a distance by my alternating system now universally established. The direct current system could also be employed if the heretofore insuperable difficulties of insulating the transmission lines can be overcome.

"Such a source of power obtainable everywhere will solve many problems with which the human race is confronted. My alternating system has been the means of harnessing 30,000,000 horsepower of waterpower, and there are projects

Nikola Tesla, Starting His 78th

Year, Works on

Revolutionary Power Project and

Also Is Completing Process

for Photographing Thought

now going on all over the world which will eventually double that amount. But, unfortunately, there is not enough waterpower to satisfy present needs, and everywhere inventors and engineers are endeavoring to unlock some additional store of energy."

WILL the smashing of the atom lead to this new power energy? Let Mr. Tesla answer:

"The public is naturally led to expect a great revolution through the harnessing of atomic power, but this is an illusion. Atomic energy is not available for work. I operated many years ago apparatus of a capacity of 2,000 horsepower and tension of 18,000,000 volts with which trillions of atoms were smashed in a fraction of a second. I generated all sorts of intense and destructive rays, but found no trace of any energy which should have been liberated through the shattering of atomic structures, according to theory. For the last thirty years I have warned my fellow scientists that there is nothing to be expected in this field except some specific effects due to changes in the atomic structure which may have more or less value."

By adding that the new form of energy which he has been investigating many years would be available at any place in the world in unlimited quantities, and that the machinery for harnessing it would last more than 5,000 years, Mr. Tesla would say little more on the subject. Just when the power will become available for practical purposes he could not predict with any degree of precision. In a few years, perhaps, he ventured to say.

Mr. Tesla then talked of several other projects on which he has been working by way of relief from too much concentration on the main piece of work. He described one of his other interests, one highly dramatic, which stirs the imagination and which, doubtless, will sound too revolutionary to most people. But it must not be forgotten, as Mr. Tesla points out, that the ideas of television and radio and airplane were scoffed at in their infancy.

"I expect to photograph thoughts," announced Mr. Tesla calmly, in the same tone of voice that a person occupied with some trivial things in the scheme of life might announce that it was going to rain.

Continued Mr. Tesla: "In 1893, while engaged in certain investigations, I became convinced that a definite image formed in thought must, by reflex action, produce a corresponding image on the retina, which might possibly be read by suitable apparatus. This brought me to my system of television, which I announced at that time.

"My idea was to employ an artificial retina receiving the image of the object seen, an 'optic nerve' and another such retina at the place of reproduction. These two retinas were to be constructed somewhat after the fashion of a checker board, with many separate little sections, and the so-called optic nerve was nothing more than a part of the earth.

"An invention of mine enables me to transmit simultaneously, and without any interference whatsoever, hundreds of thousands of distinct impulses through the ground just as though I had so many separate wires. I did not contemplate using any moving part—a scanning apparatus or a cathodic ray, which is a sort of moving device, the use of which I suggested in one of my lectures of that period.

"Now if it be true that a thought reflects an image on the retina, it is a mere question of illuminating the same properly and taking photographs, and then using the ordinary methods which are available to project the image on a screen.

"If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed, and in this way every thought of the individual could be read. Our minds would then, indeed, be like open books."

BESIDES his discoveries concerning the harnessing of the new energy, television and thought photography, Mr. Tesla is working to produce a type of radio transmitter which will insure the strictest privacy in wireless communication regardless of the number of subscribers, and he is developing some important discoveries in molecular physics which will revolutionize the science of metallurgy and greatly improve metals.

After a discussion of his new scientific findings, Mr. Tesla turned to the subject of his personal source of energy and what he considers the real values of life.

"One of the most fundamental and also one of the saddest facts in human life is well brought out in a French proverb which, freely translated, means: 'If youth had the knowledge and age the power of doing.'" said Mr. Tesla. "Our condition of body and mind in old age is merely a certificate of how we have spent our youth. The secret of my own strength and vitality today is that in my youth I led what you might call a virtuous life.

"I have never dissipated. When I was a young man I understood well the significance of that old French proverb, although I doubt that I had even heard it then. But I seemed to have a clear understanding while

still young that I must control my passions and appetites if I wanted to make some of my dreams come true.

"So with this in view, quite early in life I set about disciplining myself, planning out a program of living for what I considered the sane and worthwhile life.

"Since I love my work above all things, it is only natural that I should wish to continue it until I die. I want no vacation—no surcease from my labors. If people would select a life work compatible with their temperaments, the sum total of happiness would be immeasurably increased in the world.

"MANY are saddened and depressed by the brevity of life. 'What is the use of attempting to accomplish anything?' they say. 'Life is so short. We may never live to see the completion of the task.' Well, people could prolong their lives considerably if they would but make the effort. Human beings do so many things that

pave the way to an early grave. 'First of all, we eat too much, but this we have heard said often before. And we eat the wrong kinds of foods and drink the wrong kind of liquids. Most of the harm is done by overeating and under-exercising, which bring about toxic conditions in the body and make it impossible for the system to throw off the accumulated poisons. bath, followed by a prolonged cold

"My regime for the good life and my diet? Well, for one thing, I drink plenty of milk and water. 'Why overburden the bodies that serve us? I eat but two meals a day, and I avoid all acid-producing foods. Almost everybody eats too many peas and beans and other foods containing uric acid and other poisons. I partake liberally of fresh vegetables, fish or meat sparingly, and rarely. Fish is reputed as fine brain food, but has a very strong acid reaction, as it contains a great deal of phosphorus. Acidity is by far the worst enemy to fight off in old age.

"Potatoes are splendid, and should be eaten at least once a day. They contain valuable mineral salts and are neutralizing. 'I believe in plenty of exercise. I walk eight or ten miles every day, and never take a cab or other conveyances when I have the time to use legpower. I also exercise in my bath daily, for I think this is of great importance. I take a warm

"MY SLEEPLESSNESS does not worry me. Sometimes I doze for an hour or so. Occasionally, however, once in a few months, I may sleep for four or five hours. Then I awaken virtually charged with energy, like a battery. Nothing can stop me after such a night. I feel great strength then. There is no doubt about it but that sleep is a restorer, a vitalizer, that it in-



Nikola Tesla, dean of American inventors, with numerous triumphs in electrical engineering behind him, as he looked on his 77th birthday, which he recently celebrated

"I expect to photograph thoughts," says Mr. Tesla. "If this can be done successfully, then the objects imagined by a person would be clearly reflected on the screen as they are formed. Our minds would then, indeed, be like open books."

blue grass prairie of central Missouri, through Audrain county, with the greatest clay mines and zinc brick plants in the world; through historical Bowling Green, the home of Champ Clark and the location of the magnificent monument to this great statesman; through the greatest nurseries in the world in Pike county and across three of the great rivers of the Mississippi valley, the Missouri river, the Mississippi river and the Illinois river.

An alternative route from Kansas City would be over U. S. 80 through Sedalia, the Missouri state fair grounds, to Jefferson City.

Another newly opened route across Missouri from the Southwest comes through Springfield and the famous Ozark hills, over the great Hannibal dam and the Lake of the Ozarks, the largest artificial fresh water lake in the world and on through the state capital to join the above route at Kingdom City.

Journal-Post Pattern



You'll need at least one satin frock for fall and surely a jacket costume. We've sketched two stunning models here . . . both mother and daughter are favored. An adorable frock for the gay young miss has clever bodice seamings that simulate a tricky bolero . . . how we dote on them! The sleeves and flattering collar are youthful and smart. If you choose satin for very best, use both dull and shiny sides. For school try it in contrasting cotton prints, or in wool and silk. This captivating ensemble has been designed along slenderizing lines . . . good news for the woman of matronly proportions. The jacket is hip length with sleeves set in raglan fashion. Beneath is a frock equally charming that has undeniable chic with the surplice bodice, snug hip yoke and pointed skirt.

Pattern 2573 is available in sizes 12, 14, 16, 18 and 20. Size 16 takes 4 yards 38-inch fabric.

Pattern 2513 is available in sizes 36, 38, 40, 42, 44 and 46.

Send 15 cents, in coins or stamps (coins preferred), for each Anne Adams pattern. Write plainly your name, address and style number. Be sure to state size wanted.

The Anne Adams Pattern Book features a charming collection of afternoon, sports, golf, tennis dresses, jumpers, house frocks, special beginners' patterns, styles for juniors, and lovely clothes for youngsters, and instructions for making a chic sweater. Send for your copy. Price of catalog, 15 cents. Catalog and pattern together, 25 cents.

Address orders to Journal-Post Pattern Department.

Tesla seems on the verge of something stupendous!

TESLA CERTAIN OF HIS NEW POWER

Inventor Says Only Details Remain to Be Checked.

The closing of experiments which reveal the availability of a hitherto untapped reservoir of energy, to be developed through simple machines which will last 500 years, was announced today by Nikola Tesla, inventor and physicist. Mr. Tesla chose his seventy-seventh birthday for his announcement, which was in reality an amplification of an announcement first made on his seventy-fifth.

Even now, however, details remain to be checked before the findings may be published and the source of the power revealed. Mr. Tesla has, however, completed and checked the basic experiments, he says, and feels able to announce as a certainty what he would indicate two years ago as only a probability.

He characterized his discovery as "so basic that it will undo the Einstein theory of relativity." The machines will be simpler than "any machines ever invented for the production of power." He added that the initial costs of the machines would be relatively large, but that they would be, for the practical purposes of short-lived man, everlasting. After installation, the machines will cost almost nothing for operation, he added. "There will be unlimited power almost for the asking."

He said, however, that he expected to be considered crazy. "They called me crazy in 1896 when I announced the discovery of cosmic rays," he said. "Again and again they jeered when I discovered something new and then years later saw that I was right."

Mr. Tesla at one time worked with Thomas A. Edison. He is accepted as one of the world's outstanding electrical technicians, who had contributed much of the research on which the practical application of radio is based.

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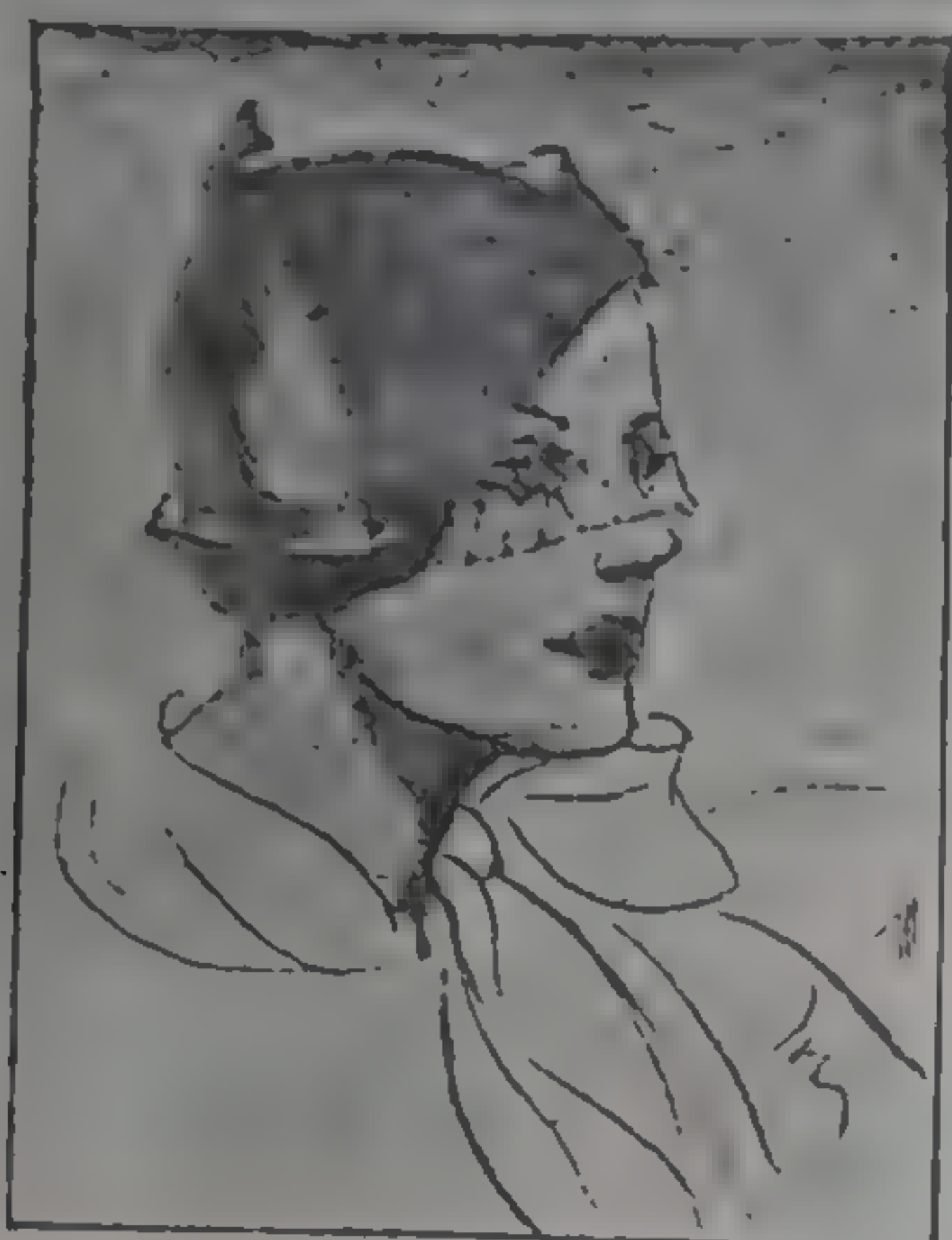
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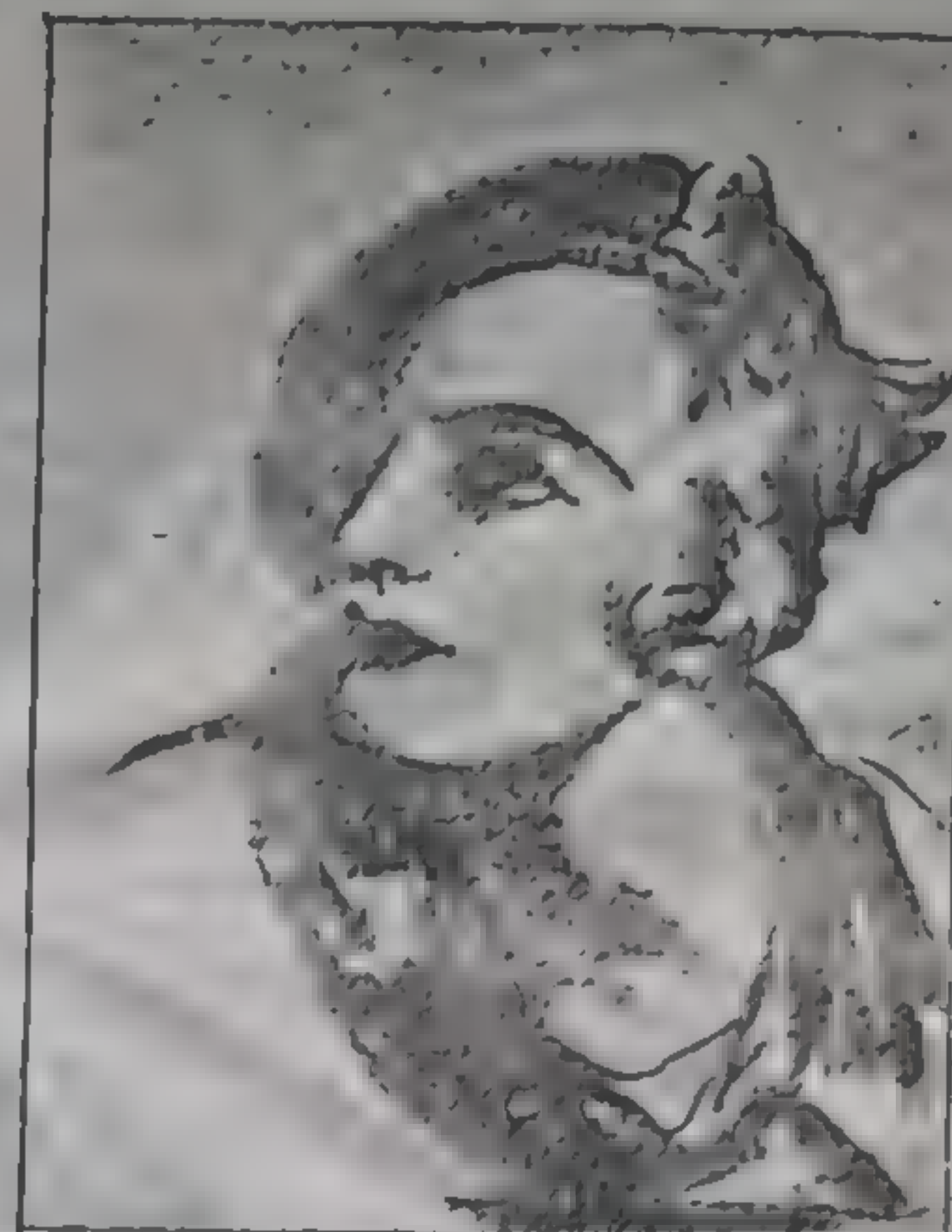
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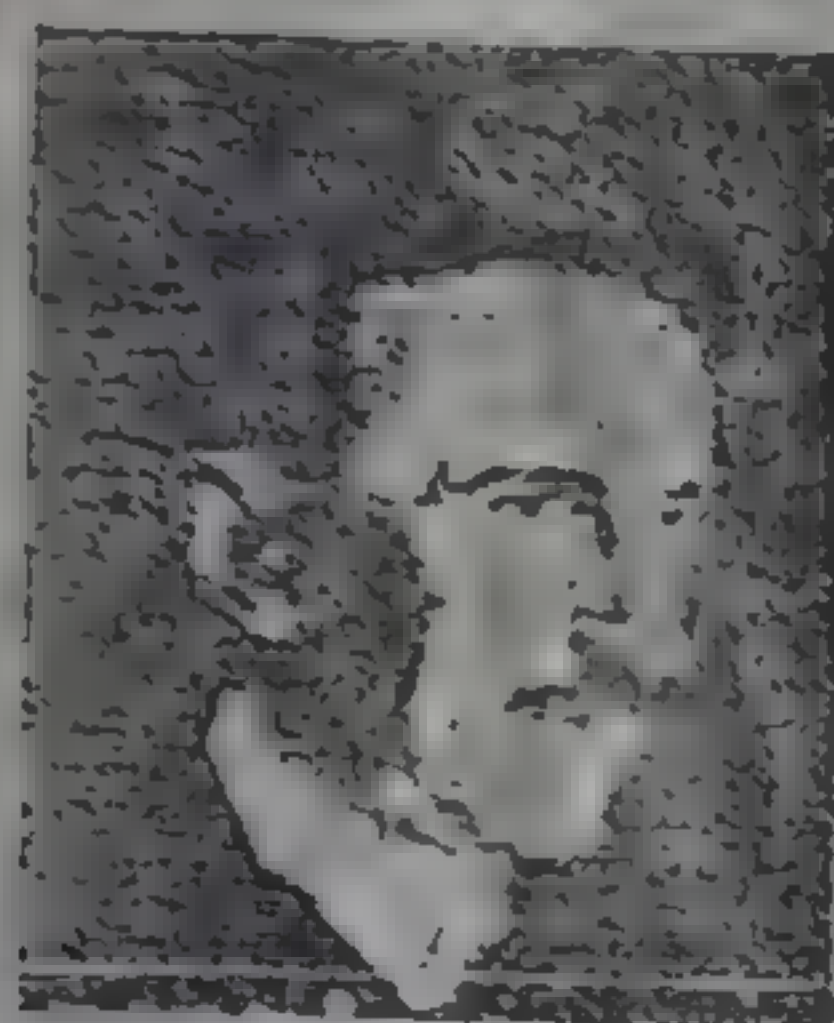
PRINCESS ALEXANDRA KROPOTKIN

linguist, friend of the famous in Europe, and descendant of the first czar of Russia

(Reading time: 4 minutes 45 seconds.)

OUT on the sidewalk on sunny days, in front of a commercial hotel near the Pennsylvania Station, you can see a gaunt old gentleman walking up and down. He is head and shoulders above the New York crowd. He is a giant.

Dr. Nikola Tesla is a giant in this town and time. During the greater part of this the greatest century in the inventive life of mankind, Dr. Tesla has worked and discovered and thought among the foremost.



Nikola Tesla

He invented the arc light, developed the transmission of electric power without wires. He worked with Edison. His experiments in charging the human body with high-frequency currents (under certain specific conditions) have proved of inestimable value in medical practice.

"Some day," said Dr. Tesla, "we will all be using these so-called 'electrical baths' to cleanse our bodies of dust and dirt."

As I talked with Tesla his thoughts swept back over the centuries to man's first awareness of electricity.

"Moses had an instrument for storing electricity," Tesla told me. "It came from the Egyptians, and it generated electricity from the friction of the wind blowing against curtains of silk."

We talked of Dr. Tesla's childhood; of his Serbian parents; of Smiljan—Place of Flowers—where he was born.

The vividness of his memory amazed me. Dr. Tesla remembers everything he ever has done or seen or heard throughout his long and eventful life. Incidents which occurred when he was two years old are as clear to him as those of yesterday, and he remembers word for word the text of books read in childhood.

Vision, a tremendous capacity for observation, intense interest in all the manifestations of creation—these are Dr. Tesla's, and with them a grave and courtly kindness.

AMONG the new books I like particularly Martha Ostenso's Prologue to Love. The rugged northern country of British Columbia interested me and the strength of the story is unusual, I thought. (Published by Dodd, Mead.)

SOME days ago a determined lady—she is socially prominent and very active in charity work—attempted to prove to me that everyone was much happier in the Middle Ages than most of us are today.

Since I talked with the determined lady I have come upon some rules that were in force at a rich English monastery of medieval times.

"A bath should by no means be refused to a body when compelled thereto by the needs of ill health. . . .

Should a brother wish for one when not advantageous, his desire is not to be gratified."

That was one of the rules. I wonder how the determined lady would like being compelled to forgo the bathing privileges of our kindly civilization? I wonder how she would like to wear the towering hair arrangement of the eighteenth century—and take her hair down only once a month?

Not for me! I prefer to live in 1932.

DO you remember the days when children were encouraged to collect flowers, ferns, and leaves, to press them and save them, and to pin them on sheets of thick paper with a neat description of each specimen written in a corner?

These childhood herbariums were beautiful and instructive. I had, I remember, a fine collection of dried seaweeds. Our trend today is all toward professionalism. Collecting leaves and plants is too often dismissed as leading nowhere.

Yet the road that seems to wander now has a way at times, of leading to some unexpected haven. For example:

Fifty women who learn to preserve and classify plants when they were girls have just been given steady jobs at the New York Botanical Garden.

THE mole has burrowed its way back into favor. Moleskin is the fur of the year for our new "transformation" sets.

Wonderful things, these sets, and I am told that Scotch pelts are the best of the moleskins.

I saw one set consisting of a medium-sized moleskin collar with two fur scarf ends that could be attached to the collar or clipped on to a striped jersey scarf, and a small cape to be used with the collar or without. These combinations served in turn on two suits, two coats, and a cloth dress. I'll bet that set was made of Scotch mole. No other mole could inspire such thrift!

I MET a tall blonde at a recent tea party. I didn't hear her name. I judged her to be about thirty-five. "Mutton," said I to myself, "dressed as lamb."

A pancake hat perched on her curls—the way kids put their hats on sometimes when they are being funny. Her baby-blue dress clung too intimately to her figure, and she wore a large cheap-looking ornament at her throat—of imitation diamonds, I thought.

Half an hour later I learned her name. She was a much advertised beauty, a woman of great wealth. I realized that her diamonds were real but so ostentatious that they looked false.

And her actual age, I knew, was twenty-five, not thirty-five.

With just a little dignity and taste she would have looked a youthful twenty-five. Her foolish pursuit of schoolgirl "kiddishness" added ten years to her appearance.

Light

Former President G

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INVENTION IN RETROSPECT.

In 1913 The Scientific American held a contest open to the world to determine what were "the ten greatest inventions of our time." Commercial importance was to be the criterion of greatness, and by "our time" the preceding twenty-five years was meant. One of those who participated was Mr. WILLIAM J. WYMAN, who, as a Patent Office examiner, was in a peculiarly favorable position to appraise inventions. In The Journal of the Patent Office Society Mr. WYMAN now looks back at his list of nearly two decades and judges himself.

The ten inventions selected by him in 1913 were the electric furnace which reduced the price of aluminum from \$12 to 25 cents a pound; the steam turbine, which even then was driving ships at unprecedented speeds and generating energy at unprecedented low costs; the automobile, which was changing the habits of the American people and restoring the highway to its old social and economic importance; moving pictures; the airplane, which realized a dream as old as man; wireless communication, which was intangibly linking ships to their ports and colonies to their mother countries; the cyanide process, which trebled the output of gold; the induction motor of TESLA, which made it possible for alternating current, transmitted over long dis-

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Light on the Cuban Situation

Former President General Mario G. Menocal Stresses Short-Sighted Policy of Present Administration

PEOPLE in this country who chronically complain of the economic situation and sub-normal conditions of business do not seem to realize that, in actual fact, we are much better off than the rest of the world.

Cuba, as a case in point, near enough for Americans to study, is far worse off than we are. Due to a short-sighted and unresourceful government, Cuba has drifted into a serious economic crisis. Cuba had her chance in the latter part of the summer of last year, but lost it on the 13th of August at Pinar del Rio; although in the opinion of experts the soundest elements in the nation favored the return to power of former President General Mario G. Menocal.

General Menocal, during his administration, proved himself to be that admirable combination in a chief executive, —a business man of a high order as well as a political leader gifted with vision and judgment. Qualified observers are firmly of the opinion that he could have saved Cuba the commercial losses which she has sustained during the past few years. The best minds of the country favored him and his policy and still do; but the reigning machine, apparently, is too strong to be broken as yet. Whether Cuba will be able to work herself out of her present difficulties, handicapped as she is, remains to be seen. It appears to persons in a position to speak with authority that she will not be able to do so. At any rate,

her return to comparative prosperity can be expedited only through a change of administration.

The short-sightedness characteristic of the present government manifested itself recently in its advocacy of a grant of a 40-year monopoly on the sale of oil and gasoline in Cuba in exchange for the payment of Cuba's national debt. General Menocal opposes such a scheme on the ground that it is unconstitutional and would be a bad business deal. His intimate knowledge of the resources of his country enables him to estimate the probable value to the government of the oil deposits for the next 40 years at \$300,000,000, whereas the national debt is only \$200,000,000. Thus the Cuban Congress is detected in the act of throwing away the huge sum of \$100,000,000 merely as a political move designed to appeal to the more short-sighted members of the body politic.

"No future government of Cuba would recognize such an agreement," General Menocal declared, "but would, doubtless, annul such a monopoly." The tax on gasoline, General Menocal observed, yields about \$12,000,000 a year. General Menocal said that Oscar Cintas, who is soon to be Cuban Ambassador to the United States, had been in Wall Street for several days trying to negotiate the oil monopoly agreement.

Such mis-steps as this would be avoided under an administration concerned with the true welfare of the nation and not solely with questions of political expediency.

Stimulus and Response

DR. NIKOLA TESLA, who contributed the basic inventions which made possible the commercial development of electricity, has hit upon another discovery which, we feel, will eventually benefit the human race in a manner comparable to the benefits derived from the mysterious fluid which so thoroughly permeates all centers of civilization these days.

This discovery, the details of which were only recently released to the press, is comprised in a simple experiment which shows the mechanical nature of the function of memory. Dr. Tesla, in demonstrating this experiment, arranged a number of tuning-forks at equal distances around a master fork. He then activated the master fork to the point where all the other forks responded to it; selected one of the smaller forks at random, and taking it and the master fork into another room, he excited the master fork vigorously and for a long time, while the selected fork responded to it. He then returned with both forks to the first room and, placing the two back in their respective former positions, began gently exciting the master fork until only one fork responded—and this was the one he had chosen at random and treated to prolonged exposure to the vibratory waves of the master fork.

This experiment proves that the function of memory is mechanical and it opens avenues of investigation which seem to us to lead straight to the heart of the question of evolutionary processes in nature. The conditioning of an organism or of insensate atomic structures of any kind to repeated impressions obviously brings about some mys-

"Speak the Language Trippingly on the Tongue"

Try this on your ukulele: A bitter biting bittern bit a better biting bittern, and the bitten bittern bit the bitter bittern back, and the bitter bittern bitten by the better biting bittern is now a bitter biting bittern bitten back.—U. S. S. Breeze Kidder.

Tight-Wads

It's little use! New Jersey elected an "economy Legislature," and then the members voted themselves \$51 de luxe swivel chairs and \$24 card tables.—*Minneapolis Journal*.

terious change in that organism or structure which facilitates its absorption of repeated impressions of the same nature and renders it more susceptible to them. This law has long been recognized by physicists as it is borne out in the evolutionary processes among organic bodies, but the demonstration that it exists in insensate matter not only proves its existence in the former, but offers a readily accessible and demonstrable avenue for experimentation and research.

The human race owes Dr. Tesla a debt from which it will never be absolved, already; but we feel that the simple experiment which he has completed will result in immeasurably increasing that debt, and we hope that his keen intelligence is brought to bear on the continued investigation of the phenomena which it has opened up.

Value of Certain Super

Pioneer Radio Engineer Gives Views on Power

Tesla Says Wireless Waves Are Not Electromagnetic, but Sound in Nature

Holds Space Not Curved

Predicts Power Transmission to Other Planets

By Nikola Tesla

The assumption of the Maxwellian ether was thought necessary to explain the propagation of light by transverse vibrations, which can only occur in a solid. So fascinating was this theory that even at present it has many supporters, despite the manifest impossibility of a medium, perfectly mobile and tenuous to a degree inconceivable, and yet extremely rigid, like steel. As a result some illusory ideas have been formed and various phenomena erroneously interpreted. The so-called Hertz waves are still considered a reality proving that light is electrical in its nature, and also that the ether is capable of transmitting transverse vibration of frequencies however low. This view has become untenable since I showed that the universal medium is a gaseous body in which only longitudinal pulses can be propagated, involving alternating compressions and expansions similar to those produced by sound waves in the air. Thus, a wireless transmitter does not emit Hertz waves which are a myth, but sound waves in the ether, behaving in every respect, like those in the air, except that, owing to the great elastic force and extremely small density of the medium, their speed is that of light.

Suggested Short Waves Early

Since waves of this kind are all the more penetrating, the shorter they are, I have urged the experts engaged in the commercial application of the wireless art to employ very short waves, but for a long time my suggestions were not heeded. Eventually, though, this was done, and gradually the wave lengths were reduced to but a few meters. Invariably it was found that these waves, just as those in the air, follow the curvature of the earth and bend around obstacles, a peculiarity exhibited to a much lesser degree by transverse vibrations in a solid. Recently, however, ultrashort waves have been experimented with and the fact that they also have the same property was hailed as a great discovery, offering the stupendous promise to make wireless transmission infinitely simpler and cheaper.

It is of interest to know what wireless experts have expected, knowing that waves a few meters long are transmitted clear to the antipodes. Is there any reason that they would behave radically different when their length is reduced to about half of one meter?

Waves Go Around World

As the general knowledge of this subject seems very limited, I may state, that even waves only one or two millimeters long, which I produced thirty-three years ago, provided that they carry sufficient energy, can be transmitted around the globe. This is not so much due to refraction and reflection as to the properties of a gaseous medium and certain peculiar action which I shall explain some time in the future. At present it may be

New Columbia Extension Traces History of

850 Subjects Included in Di Evening Students May Obtain Degree in Accounting Department

A six-year course in accounting which will enable evening students to gain a bachelor's degree in place of the certificate now issued to the graduates of the four-year course, will be inaugurated this fall in the University Extension at Columbia. Professor James C. Egbert, director, announced yesterday.

The change is being made, according to Professor Egbert, to meet with the new requirement of New York State law that after January 1, 1938, "every candidate for examination as a certified public accountant shall present evidence that he has satisfactorily completed the course of study in a college or school of accountancy registered by the department as maintaining a satisfactory standard."

The 1932-33 program of the Columbia extension which will enter its twenty-second year as a university undertaking, includes 850 courses, among which will be a series of studies in the history of philosophy based on the "public courses" of the universities of France, to be under the supervision of the leading members of the Columbia faculty of philosophy.

During the coming year, students will be enabled to follow their various lines of study at the Seth Low Junior

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so-called three-electrode tubes. This invention has been credited to others, but as a matter of fact, it was brought out by me in 1892, the principle being described and illustrated in my lecture before the Franklin Institute and National Electric Light Association. In my original device I put around the incandescent filament a conducting member, which I called a "sieve." This device is connected to a wire leading outside of the bulb and serves to modify the stream of particles projected from the filament according to the charge imparted to it. In this manner a new kind of detector, rectifier and amplifier was provided. Many forms of tubes on this principle were constructed by me and various interesting effects obtained by their means shown to visitors in my laboratory from 1893 to 1899, when I undertook the erection of an experimental world-system wireless plant at Colorado Springs.

During the last thirty-two years these tubes have been made veritable marvels of mechanical perfection, but while helpful in many ways, they have drawn the experts away from the simpler and much superior arrangement which I attempted to introduce in 1901. My plans involved the use of a highly effective and efficient transmitter conveying to any receiver at whatever distance, a relatively large amount of energy. The receiver is itself a device of elementary simplicity partaking of the characteristics of the ear, except that it is immensely more sensitive. In such a system resonant amplification is the only one necessary and the selectivity is so great that any desired number of separate channels can be provided without going to waves shorter than a few meters.

For this reason, and because of other shortcomings, I do not attach much importance to the employment of waves which are now being experimented with. Besides, I am contemplating the practical use of another principle, which I have discovered and which is almost unlimited in the number of channels, and in the energy three-electrode tubes. This invention

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waves have been experimented with and the fact that they also have the same property was hailed as a great discovery, offering the stupendous promise to make wireless transmission infinitely simpler and cheaper.

It is of interest to know what wireless experts have expected, knowing that waves a few meters long are transmitted clear to the antipodes. Is there any reason that they would behave radically different when their length is reduced to about half of one meter?

Waves Go Around World

As the general knowledge of this subject seems very limited, I may state, that even waves only one or two millimeters long, which I produced thirty-three years ago, provided that they carry sufficient energy, can be transmitted around the globe. This is not so much due to refraction and reflection as to the properties of a gaseous medium and certain peculiar action which I shall explain some time in the future. At present it may be sufficient to call attention to an important fact in this connection, namely, that this bending of the beam projected from a reflector does not affect in the least its behavior in other respects. As regards deflection in a horizontal plane, it acts just as though it were straight. To be explicit the horizontal deviations are comparatively slight. In a proposed ultrashort wave transmission, the vertical bending, far from being an advantage, is a serious drawback, as it increases greatly the liability of disturbance by obstacles at the earth's surface. The downward deflection always occurs, irrespective of wave length, and also if the beam is thrown upward at an angle to the horizontal, and this tendency is, according to my finding, all the more pronounced the bigger the planet. On a body as large as the sun, it would be impossible to project a disturbance of this kind to any considerable distance except along the surface.

It might be inferred that I am alluding to the curvature of space supposed to exist according to the teachings of relativity, but nothing could be further from my mind. I hold that space cannot be curved, for the simple reason that it can have no properties. It might as well be said that God has properties. He has not, but only attributes and these are of our own making. Of properties we can only speak when dealing with matter filling the space. To say that in the presence of large bodies space becomes curved, is equivalent to stating that something can act upon nothing. I, for one, refuse to subscribe to such a view.

Need Radio Channels

The chief object of employing very short waves is to provide an increased number of channels required to satisfy the ever-growing demand for wireless appliances. But this is only because the transmitting and receiving apparatus, as generally employed, is ill-conceived and not well adapted for selection. The transmitter generates several systems of waves, all of which, except one, are useless. As a consequence, only an infinitesimal amount of energy reaches the receiver and dependence is placed on extreme amplification, which can be easily effected by the use of the

tammaries of mechanical perfection, but while helpful in many ways, they have drawn the experts away from the simpler and much superior arrangement which I attempted to introduce in 1901. My plans involved the use of a highly effective and efficient transmitter conveying to any receiver at whatever distance, a relatively large amount of energy. The receiver is itself a device of elementary simplicity partaking of the characteristics of the ear, except that it is immensely more sensitive. In such a system resonant amplification is the only one necessary and the selectivity is so great that any desired number of separate channels can be provided without going to waves shorter than a few meters.

For this reason, and because of other shortcomings, I do not attach much importance to the employment of waves which are now being experimented with. Besides, I am contemplating the practical use of another principle, which I have discovered and which is almost unlimited in the number of channels and in the energy three-electrode tubes. This invention has been credited to others, but as a matter of fact, it was brought out by me in 1892, the principle being transmitted. It should enable us to obtain many important results heretofore considered impossible. With the knowledge of the facts before me, I do not think it hazardous to predict that we will be enabled to illuminate the whole sky at night and that eventually we will flash power in virtually unlimited amounts to planets. It would not surprise me at all if an experiment to transmit thousands of horsepower to the moon by this new method were made in a few years from now.

Gramophone Records Pictures, Swiss Tells French Academy

PARIS, Sept. 10 (AP).—A Swiss scientist from Geneva, whose name is given as Dussaud, has sent the French Academy of Sciences a paper in which he says he has invented a new system of television.

His system, he said, is based on the principle of registering pictures electrically on gramophone records and reproducing them by means of an ordinary television apparatus.

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AMERICAN—A Paper for People

ELECTRICITY'S VALUE CITED IN WAR ON CANCER

Scientist Declares Million
Volts Can Be Used Without
Discomfort to the Patient

Should cancer be treated with electric currents, with radium, or with the knife?

This question engaged attention of scientists and physicians attending the Eleventh Annual Congress of Physical Therapy at Hotel New Yorker yesterday.

Nicola Tesla, eminent in electrical research and sender of the first wireless message around the world, favors electric current treatments. He said:

"Radium emanations are always hazardous, being difficult to confine to the precise region under treatment."

EXPLAINS APPARATUS.

Tesla went on to explain how an apparatus in his laboratory, producing 80 million electrical oscillations in a second, could be used in cancer treatment.

"With it the body may be charged with a pressure of about one million volts, which may be borne without discomfort, although the same voltage would cause explosion of a piece of metal."

Doctors Harold Swanberg and Arthur E. Perley, differing with Tesla, favored radium in cancer treatment. Dr. Swanberg said:

"One nationally known clinic has found that over 60 per cent are cured if the patients present themselves while the disease is in the early stages. Even in the more advanced stages, 12 per cent are cured by radium."

ADVOCATES KNIFE.

Dr. Edward H. Trowbridge, speaking before a special conference on surgery, advocated the knife in cancer treatment, but a new sort of knife, operated by electricity. He said:

"This knife makes it possible to operate in cancer cases before considered hopeless. An electrical current emanating from the tip of the knife does the actual cutting, and in the process it also stops bleeding and seals up nerve-tips."

Other noted physicians who spoke were Dr. Frank H. Krusen, associate dean of Temple University School of Medicine, Philadelphia; Dr. Allen T. Newman, dean of New York University College of Dentistry, and Dr. Charles F. McCarthy, director of physical therapy, New York City Department of Hospitals.

Ultra-Short Radio Waves Bent By Marconi in Test for Vatican

By The Associated Press

From his yacht Elettra, in the Gulf of Aranci, Island of Sardinia, he sent word to his collaborator, Marchese Luigi Solari, that messages had been dispatched successfully on fifty-seven-centimeter waves from Rocca di Papa, south of Rome, across the Tyrrhenian Sea to Cape Figaro, in the Gulf of Aranci, a distance of 270 kilometers (168 miles). Portable reflectors were used, communicating clearly both by radio telegraph and radio telephone.

His associates attributed great importance to the discovery because heretofore it had been possible to use ultra-short wave communication only between two points in a line of vision.

Experts here said that if he had overcome the obstacle of the earth's curvature he could overcome other obstacles, thus greatly extending the possibilities of ultra-short wave communication. This method, they said, eventually would revolutionize radio transmission, for it is infinitely cheaper and simpler than methods in use at present.

May Effect Economies, Experts Say

A. B. Chamberlain, chief engineer of the Columbia Broadcasting System, said: "Until now, utilization of the ultra-high-frequency band of radio

(Continued on page 11) GS

(Continued from page one)

tofore. It is also probable that he has developed some new principle unknown to other engineers. If this is true, the achievement ranks with the original development of wireless telegraphy."

Tesla Comments on Announcement

Nikola Tesla, famous electrical inventor and a pioneer in radio development, when asked about the possibility of bending ultra-short electrical waves, said last night at his apartment at the Hotel Governor Clinton:

"That ultra-short waves can pass around obstacles such as presented by the spherical shape of the earth is nothing new. We are telephoning with short waves to the greatest terrestrial distance without difficulty. But this is only due to the fact that the ether or universal medium which transmits the waves is not a solid body as assumed by Maxwell and Hertz, but a gas just like any other except that it is of unaccountably greater tenacity. This was established by me in experiments I made with powerful high potential vacuum tubes in 1897.

"That the ether is a gas is most fortunate, for if it were a solid body, transmitting transverse oscillations, the signalling by short electrical waves would be very much circumscribed as I have announced on previous occasions. I have experimented with waves from one to two millimeters

Declarations of Faith

By Joseph A. Anderson

NIKOLA TESLA, acknowledged dean of American inventors, in a recent interview on his seventy-sixth birthday, reaffirmed his faith in the recuperative vitality of our old universe and proclaimed his enthusiastic belief in the tremendous possibilities of the future with such vigor and such ringing confidence as to shame the cowardly croakings of our modern Cassandras.

Coming on the heels of John D. Rockefeller's robust testament to the world on the occasion of his ninety-third birthday, this exhibition of courage, industry and tenacity on the part of our elders should give us pause. We have endured a devastating plenty of professional pessimism. It is easy enough, Heaven knows, in time of general distress to cultivate a down-at-the-mouth attitude. It is, indeed, far easier than any declaration of faith.

* * *

WHEN Tesla, with a boyish exuberance that mocks his years, informs the world that he has had "a very successful year," it is in the best interest of the world to listen. "I have made two inventions," he continues, "among the most important of my life. When they are announced one will be like the hundred thousand trumpets of the Apocalypse. The other will be less sensational, but it, too, will be important. It will be like the shout with which Joshua's army brought down the walls of Jericho!"

When Rockefeller asserts his unwavering adherence to "the fundamental principles upon which this country was founded—liberty, unselfish devotion to the common good and belief in God"—he is, it would appear, championing an unpopular credo. This talk of "liberty" and "unselfish devotion to the common good" is hardly calculated to sit well on an empty stomach. We can understand that. We can readily appreciate the cynical doubt which might well greet the catchword "liberty" in a land fettered to a vicious amendment. We cannot in all conscience blame that considerable portion of our people which has been betrayed and robbed and crucified by overlords whose "devotion to the common good" would warrant a strenuous use of the whipping post.

* * *

BUT these "fundamental principles" remain fundamental and true nevertheless. If anything, they are more fundamental, more true than they have ever been. That we have traduced these principles is unquestionable. And yet, as principles without which no democratic government can endure, they are not lightly to be dismissed. They were born out of blood and anguish and enormous travail. They will continue to exact a bitter price. But they are worth it.

"Let us," says Rockefeller, "as a nation, looking proudly to our past where it has been noble, and recognizing with humility our mistakes of extravagance, selfishness and indifference, let us, with faith in God, in ourselves and in humanity, go forward, courageously resolved to play our part worthily in building a better world."

* * *

IT is our profound conviction that both Tesla and Rockefeller will contribute mightily toward the building of that better world. It is our prayerful hope that they may live to enjoy the fruits of their building.

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the sole offender, although he poses
as a Democrat, we who live in other
States wonder if such things as this

I have this idea years ago and it will be carried out in a much simpler way than here described.

•The ROCKET in the

The problem of making war effective has become that of destruction from the greatest distance. The rocket stands out as the most far-reaching potentiality for attack on a distant foe.

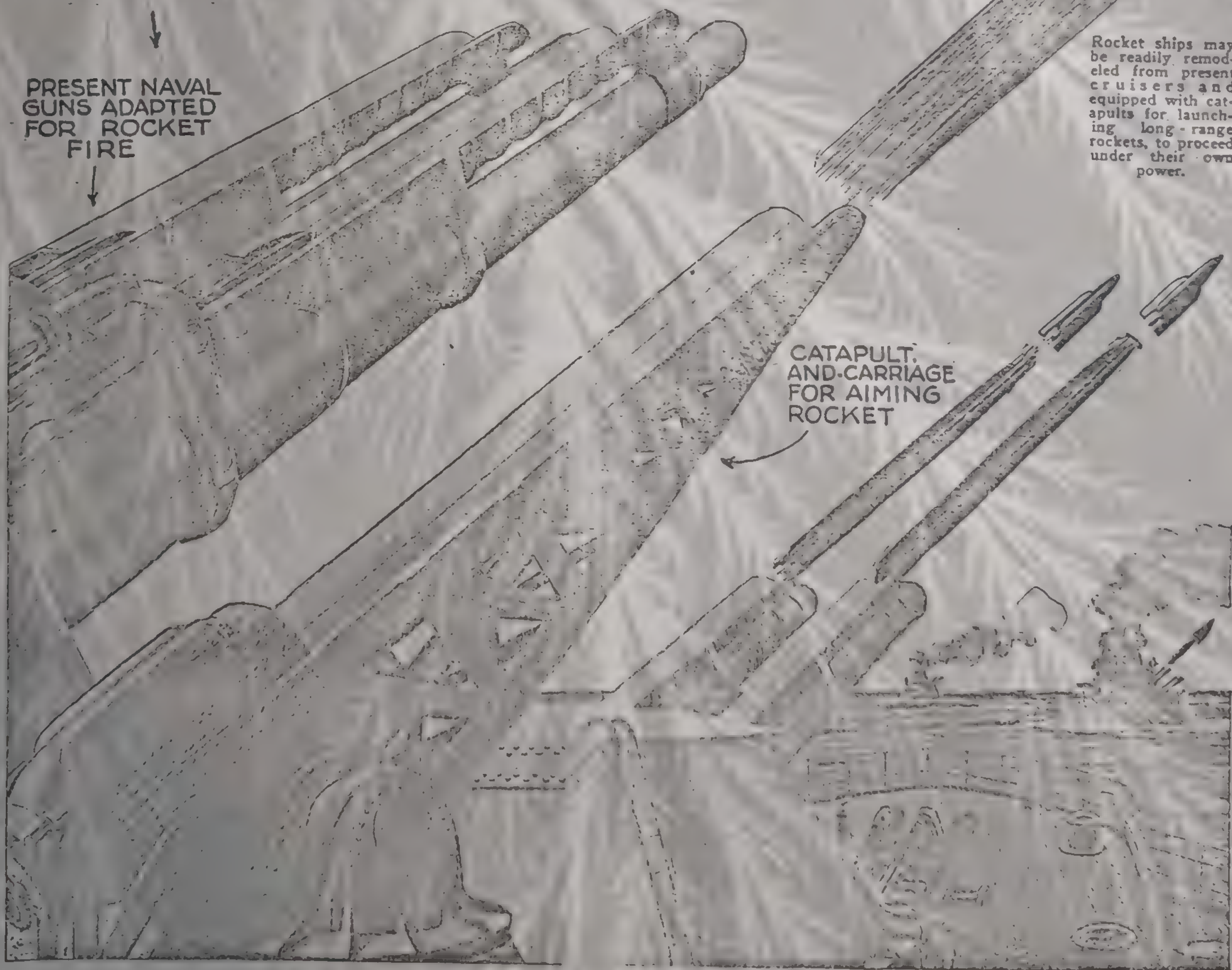
"THE whole nation will find itself on the firing line," said Marshal Foch, looking forward to "the next war." To understand how the rocket will dominate future conflicts, consider the question of destruction by long-range bombardment, one of the expedients of scientific militarists.

Assume that two nations are at war and their armies have been rushed to the frontier. The strategy of the new warfare will call for the prevention of an enemy invasion and, simultaneously, the destruction of the enemy's strategic centers by long-range shells.

Consider what this means. Long-range artillery, which previously has been used principally against opposing armies, at distances of five to twenty-five miles, must now be adapted to shoot shells 200 to 500 miles. It will be necessary, furthermore, to hit the distant targets aimed at; and to hit them often enough to complete the desired destruction. For this novel task, in my opinion, present artillery is entirely unfit and, were the success of future long-range bombardment to rest solely on artillery, one arm of the "destruction from a distance" program would surely fail. But luckily for the militarist, the rocket will supply him with the very instrumentality that he needs.

It is quite possible that, even were long-range guns constructed like mountains of steel, to withstand all the enormous strains of firing, and to give greatly increased velocities to the shells, they would yet fail to achieve the necessary ranges. For the enormous increase in the resistance of the air, at these great velocities, would reduce the speed of the shells so quickly as to minimize the effect of the added propulsive force. The additional energy imparted to a shell, to increase its muzzle velocity, might serve only to heat the casing by friction against the air, and add but little to its actual range.

This fundamental weakness of the present high-power artillery is in contrast with the effectiveness of the rocket-propelled shell as a means of effecting a long-distance bombardment. For the rocket can, first, propel shells to distances impossible with artillery; and, secondly could be shot in such numbers and with such rapidity as to constitute an avalanche of death from which there would be no escape.



1932

March, 1932

EVERYDAY SCIENCE AND MECHANICS

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next

WAR ?

By DAVID LASSER*

The rocket rises, gaining headway at each instant, under gyroscopic or other control of its flight, until it passes into a practically airless region; and finally descends hundreds of miles away.

The Rocket's Principle

IN simplest terms, the rocket consists of a chamber in which a fuel is burned (See Fig. 1) and the resultant expanding gases are expelled to the outside. The expansion and expulsion of the highly compressed gases causes a reaction or "kick" against the chamber walls that pushes the rocket ahead. This action is similar to the recoil of firearms; the "kick" of the weapon being the reaction to the force of expulsion of the shell.

The rocket carries its own fuel; and its motion continues until the fuel has been exhausted and the momentum lost.

If, to the rocket motor, there is attached a nose filled with high explosive, gas or anything deadly that modern science can create, there is created a self-propelling shell that should make possible the fondest dreams of the militarist.

Such projectiles would be gun and shell in one; and, therefore, no heavy ordnance would be necessary to shoot them. It would merely be necessary to give them a start, and they would carry themselves hundreds of miles, to strike with stunning force.

Batteries, shooting rocket shells into the heart of an enemy country, could be built by the thousands, and fired with the rapidity of small calibre artillery.

The rocket, in fact, would travel through the air, in a manner just the opposite of that of an artillery shell. Where the long-range artillery shell leaves the gun at its maximum speed, encountering at once the great resistance of the lower air levels; the rocket would leave the mounting slowly, and acquire speed only as it shot upward into the high rarefied regions of the air, where the resistance is small.

Shooting upward, thirty to fifty miles above the earth in its

passage, the rocket shell would then drop with terrifying speed upon city or munition plant.

War to the Utmost

WHAT would this mean in an actual conflict? Scanning the map of Europe, we see that Paris could easily be shelled from the German border, and Berlin from the Rhine. London would be within range of both French and German shells; and little Switzerland, now a buffer state against the progress of opposing armies, might find itself arched by a rain of Italian and French rocket shells, hurled into enemy territory.

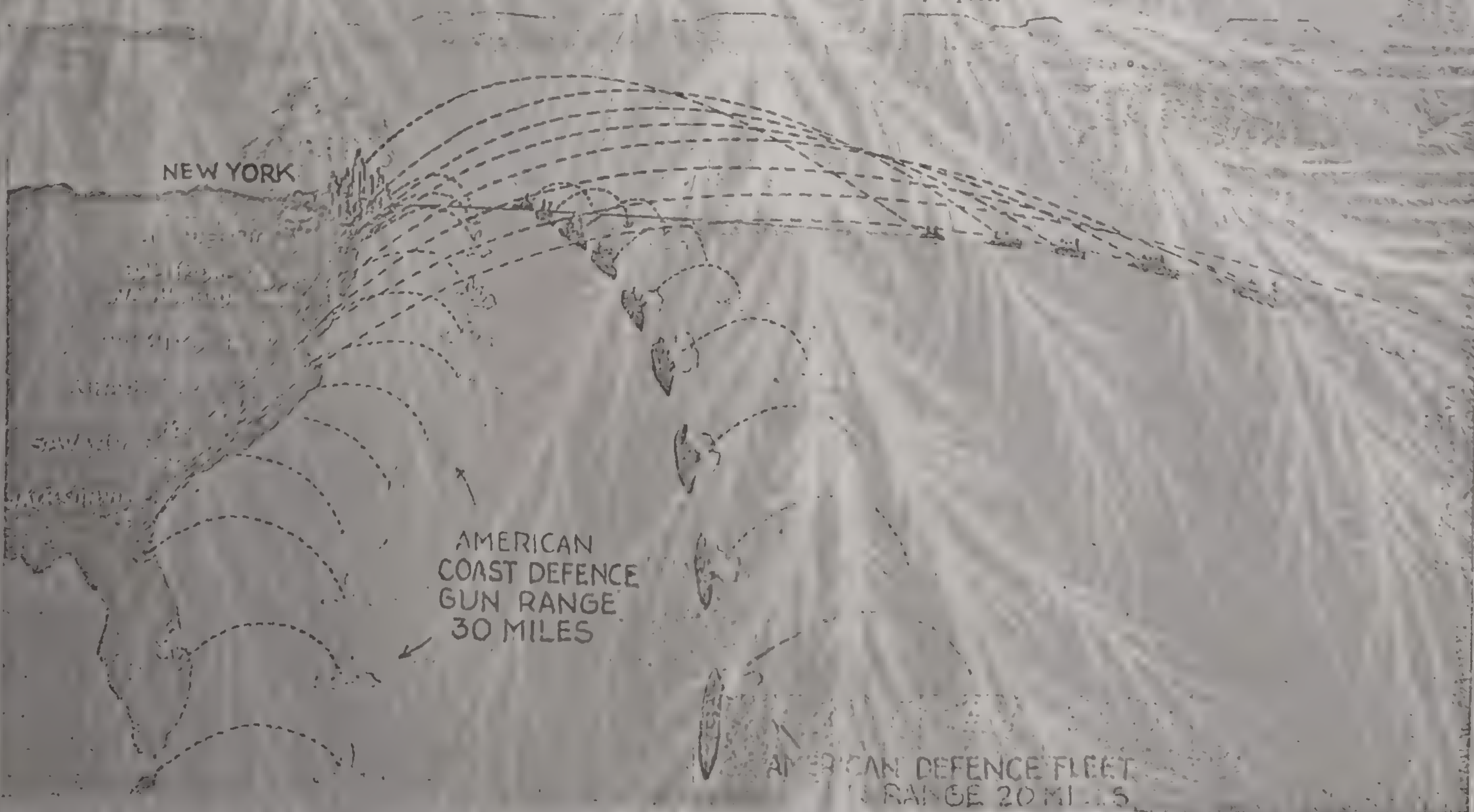
Each nation could devastate the other in a rain of death, from which there could be no relief. All of the creative and destructive facilities of man could be destroyed without a foot being set across an enemy border.

Let us imagine the effect of the rocket upon America, in its supposed isolation. An enemy fleet may start upon the invasion of America equipped with rocket batteries that shoot shells 200 miles or more. This is possible, since no heavy ordnance need be carried to shoot them. The fleet could anchor off our coast and reduce our forts to a mass of ruins. Our sixteen-inch coast-defense guns, with maximum ranges of 30 miles, would be toys, compared to the naval rocket batteries.

Boston, New York, Philadelphia, Baltimore and Washington could be reduced by an enemy fleet resting in safety in the Atlantic; or our Pacific ports might fall without a serious blow being struck.

For emphasis I record an editorial of the *New York Times*, of October 10, 1931, commenting upon the perfection of anti-aircraft guns. "What was to happen in the next war," said the *Times*, "has been described in terms calculated to frighten every nation out of its growth, if the predictions were taken without a thought of the means of protection. In such a vast convulsion the airplane would be the means of destruction. If a defense from the ground could be contrived countries would feel safer."

*President, American Interplanetary Society; author, "The Conquest of Space."



Against an invading fleet armed with long-range rockets, the heaviest of coast defense and naval guns might be as useless as clubs and spears. The extension of battle areas would be as revolutionary as in the days

of the introduction of the modern rifle and the airplane. Assaults would be directed upon known objectives, by map; just as in long-range artillery fire of today which is directed upon invisible targets.

FEB. 27, 1950

Elaborate Ceremonies

Nikola Tesla Tells of New Radio Theories

Does Not Believe in Hertz Waves and Heavyside Layer, Interview Discloses

The model of a "Tesla Coil" which will be featured in the historical exhibit of the radio show reawakens interest in its inventor.

It is not generally appreciated that this curious apparatus, often associated merely with pretty or spectacular demonstrations of high voltage electricity, is really a fundamental part of modern radio. For all the tuning apparatus and circuits in every transmitting and receiving set are simply variations of Tesla coils and Tesla coil circuits.

It was for this invention, and other inventions and principles concerned with tuning, heterodyning, and the generation of continuous waves, which were made at least several years before the very first experiments of Marconi, that many of our most reputable engineers have conceded to Nikola Tesla the title of "Father of Radio."

Mr. Tesla, still actively working, was interviewed last week to get his ideas regarding the prospects of the radio of 1930, and beyond. As a prophet, however, he balked. He had repeated time and again his visions for the future. As far back as 1900, he had contemplated a world-wireless system which included broadcasting, picture transmission, international time service, and in addition television and the distribution of electrical power. Part of this early prophecy has been realized—what remained, still stood as his prediction.

Disputes Hertz Waves

What, then, about power transmission by radio? Laurence M. Cockaday, the technical editor of this radio section, had expressed the opinion several weeks ago that, with present apparatus at least, it was hardly feasible. Mr. Tesla agreed to discuss the point at length. As a result, he made public for the first time one of his most extraordinary conclusions—that Hertz waves do not exist! If his theory is true, there may be found in it more adequate explanations of "dead spots," fading, reflection and a dozen other problems that have always puzzled the profession.

The inventor began by referring to Cockaday's article:

"I have read the article, and I quite agree with the opinion expressed—that wireless power transmission is impractical with present apparatus. This conclusion will be naturally reached by any one who recognizes the nature of the agent by which the impulses are transmitted in present wireless practice."

"When Dr. Heinrich Hertz undertook

Nearly 300 Manufacturers to Show Latest Models of Sets and Accessories Monday at 2 P. M.

\$300,000 Broadcast Bill on Networks

Leading Artists to Appear in Costume Before Television and Microphones

By Lloyd Jacquet

TO that ever-increasing group of persons who have discovered radio there is only one Mecca this week. It is the Annual Radio World's Fair, which will unfold during six short days and nights the new 1930 pageant of radio genius and artistry.

It has been going on for six years, this annual parade of the industry's accomplishments for the twelve months. Yesterday ideas that were merely visions, imaginations, today realities. And somehow radio, the super-craftsman, the master showman, has performed and justified the expectancy of thousands of its devotees, who religiously pilgrimage toward the Elysian temple of its god.

Radio has a habit of doing things in a staggering, colossal way. Such is broadcasting, with its nationwide, even international coverage; such is radio manufacture with its millions of receivers from the remotest corners. And now the "biggest show on earth," the largest industrial show under one roof!

At 2 o'clock tomorrow afternoon the heavy doors of Madison Square Garden will swing open. This will be the "advance" opening, for the impatient may not wait till the "official" opening, which occurs at 7:30 that evening.

Radio show openings are famous. This one will be memorable. Congressman Wallace White from Maine who fathered the present radio act, will be present as the guest of honor at the opening. Sir Thomas Lipton, noted English sportsman, and Count Felix von Luckner, German navy war raider, will give the ceremony an interesting international aspect.

During the broadcasting of this event, an annual radio ritual that takes place in the special studio built on the exposition floor, Miss Olive Beaupré Miller, who has been chosen as the most beautiful radio artist in America, will, no doubt, be seen.

Beyond the portals of the broadcasting studio and into the paradise of displays, where several hundred manufacturers of sets and accessories of all sorts are bringing before the public eye the efforts of their technicians during the past year, thousands of hungry enthusiasts will find appraisal, comment and foreboding.

Radio is a complicated mystery. It is full of disturbing ramifications. It's

(Continued on page twenty)

World Good Will

Program Interchange Best Peace Promotion by Nation Says Commerce Head

them. That at the same time they learn more about our nation, our people, our motives and ideals is greatly to be desired.

We may well expect that at some future date—one not so far in the future, at that—it will be possible to listen in on regularly scheduled features from distant parts of the earth. Latin-American growers will advertise their coffee or bananas around the world with characteristic programs from Brazil or Costa Rica. The spaghetti manufacturer will give us broadcasts from Milan and the jeweler will advertise his diamond stock by entraining us with a diamond miners' quartet from some South African field. Our warm summer evenings will be made more bearable as the refrigerator manufacturer brings to us a running description of a sub-zero blizzard scene in southern Argentina with pictures.

Radio the Peacemaker

These forecasts are not visionary. They are more than merely foreshadowed. The fact awaits on the final developments only, and, as in the past, we may assure ourselves that those devoted to the necessary research are fully capable of performing the necessary miracles. Their success is inevitable. More than one threatened international clash of the future will be "called on account of radio."

The surest foundation for the betterment of relations among nations is the groundwork of closer acquaintanceship among their respective peoples. Radio is one of the most potent and effective contributions in that good work.

Viennese Tunes Featured

On WEAH Hour, Monday

Vienna, which is often called "the world capital of music," is the source from which will be drawn the program of the General Motors Family Party Monday, and in which Lewis James, Janor, and Frank Black's Orchestra will be presented.

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N.Y. Herald Tribune
Sept 22, 1929

controls, and power resistances of types national tuners, including the 20 and the new short wave thrill features that constructors will want to miss. Also featured will be a remote control turning device and complete components for making any of receivers.

complete new line of resistance power devices will also be shown. Aerovox and the International Resistance Company, with many unique applications for voltage ballast and set control.

There will be displayed the new nylon reproducer units for public address systems, as well as the new self-adjusting line voltage control of apertures.

The new Insuline electrostatic light- or arrestor may be of interest to a number of suburban listeners visiting a show.

Also there is bound to be a lot of interest shown in the complete system of line interference and man-made static eliminators displayed at the Schumann headquarters.

"Screen-Grid" Popular

All of the new receivers for home building and the kits and circuits seem to center on the use of the new screen-grid valves in the radio amplifiers, together with linear power detection or space-charge detection, coupled with either one or two stages of push-pull amplification at audio-frequency, with two —45 type valves in the output stage. Set builders are advised to shield their sets up to the teeth, with single-control features and trimmers much in evidence. It is interesting to note that this is something agreed upon by both the kit designers and the engineers who produce the designs for the ready-made receivers.

The S-M kits and parts are of even better construction and feature more radical improvements than past designs and should make mighty efficient receivers when put together efficiently.

Complete Parts for Amateurs

Although the mode for making one's own set is not so fashionable nowadays there is every chance for the experimenter to go one step farther this year in building even a better set than in the days when these receivers were the only kind obtainable, and when anybody who wanted a receiver either had to build it himself or have some one handy with tools and having a knowledge of construction, build it for him. There is plenty of new material to work with and the specialists in producing these ingenious parts and devices have conserved no expense to make them as good as humanly possible.

At the rate the experimenter will find this a veritable haven for the DX fan, and the tinkerer both in new apparatus and with accessories for making the old set work better.

Transmitting Apparatus

For the experienced amateur will be shown all types of transmitting apparatus, together with new tubes and meters for transmitting set adjustment that should enable him to build more efficient transmitters to help him in his ever expanding quest for reaching the corners of the earth with his eternal "CQ's" and straining ears.

ELECTROSTATIC
Double duty lightning arrestor
Shielded,
—new principle
reduces static

The Electrostatic is the new principle, totally shielded lightning arrestor with special resistance and condenser and choke coil filter system, together with self protecting fuse. The net result is nothing short of revolutionary. Absolute protection for both house and set. Definite static reduction and general improvement in reception. Fully guaranteed and backed by a \$100 insurance policy.

Get the new Electrostatic at your dealer's or send direct.
INSULINE CORP. OF AMERICA
78-80 Conlandt Street, New York, N. Y.

Right: Electrad fixed resistor for use in plate circuits, and (above) volume control unit made by same manufacturer

Nikola Tesla Tells of New Radio Theories

(Continued from page one)

his experiments from 1887 to 1889 his object was to demonstrate a theory postulating a medium filling all space, called the ether, which was structureless, of inconceivable tenacity and yet solid and possessed of a rigidity incomparably greater than that of the hardest steel. He obtained certain results and the whole world acclaimed them as an experimental verification of that cherished theory. But in reality what he observed tended to prove just its fallacy.

"I had maintained for many years before that such a medium as supposed could not exist, and that we must rather accept the view that all space is filled with a gaseous substance. On repeating the Hertz experiments with much improved and very powerful apparatus, I satisfied myself that what he had observed was nothing else but effects of longitudinal waves in a gaseous medium, that is to say, waves propagated by alternate compression and expansion. He had observed waves in the ether much of the nature of sound waves in air.

"Up to 1890, however, I did not succeed in obtaining a positive experimental proof of the existence of such a medium. But in that year I brought out a new form of vacuum tube capable of being charged to any desired potential, and operated it with effective pressures of about 4,000,000 volts. I produced cathodic and other rays of transcending intensity. The effects, according to my view, were due to minute particles of matter carrying enormous electrical charges, which, for want of a better name, I designated as matter not further decomposable. Subsequently those particles were called electrons.

"One of the first striking observations made with my tubes was that a purplish glow for several feet around the end of the tube was formed, and I readily ascertained that it was due to the escape of the charges of the particles as soon as they passed out into the air; for it was only in a nearly perfect vacuum that these charges could be confined to them. The coronal discharge proved that there must be a medium besides air in the space, composed of particles immeasurably smaller

than those of air, as otherwise such a discharge would not be possible. On further investigation I found that this gas was so light that a volume equal to that of the earth would weigh only about one-twentieth of a pound.

"The velocity of any sound wave depends on a certain ratio between elasticity and density, and for this ether or universal gas the ratio is 800,000,000,000 times greater than for air. This means that the velocity of the sound waves propagated through the ether is about 200,000 times greater than that of the sound waves in air, which travel at approximately 1,085 feet a second. Consequently the speed in ether is 800,000,000 x 1,085 feet, or 868,000 miles, and this is the speed of light.

"As the waves of this kind are all the more penetrative the shorter they are, I have for years urged the wireless experts to use such waves in order to get good results, but it took a long time before they settled upon this practice.

"Although the world is still skeptical as to the feasibility of my undertaking, I note that some advanced experts, at least, share my views, and I hope that before long wireless power transmission will be as common as transmission by wires."

According to Mr. Tesla, the present broadcasting station does not propagate Hertzian waves, as has always been supposed, but acts more like an "ether whistle"—transmitting waves through the ether similar to the waves transmitted by an ordinary whistle through air. He also expressed his disbelief in the Heavenside layer, and

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claimed that the reflection of waves back toward the earth was due to the change of medium encountered at the vacuum boundary of the atmosphere. At Colorado Springs, about thirty years ago, this scientist had a Tesla coil seventy-five feet in diameter, which produced voltages above 12,000,000, and sparks over 100 feet long. Electro-

WUGI

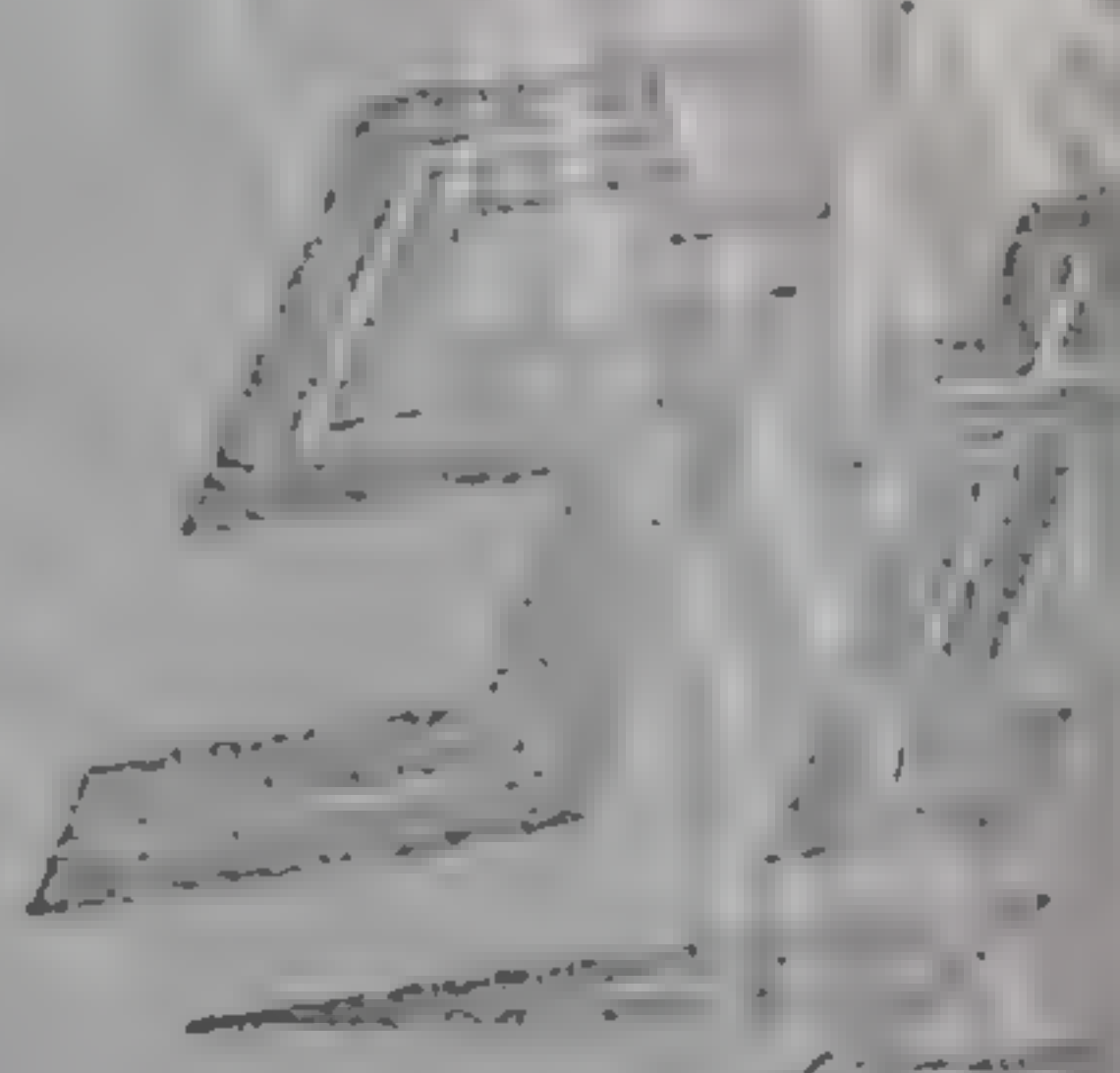
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THE American recognizing value. A simple Steinite offers a feature of high lower-priced set

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SUPRE

Editorial Comment

Radio Waves and the Transmission of Electrical Energy for Power

DR. E. F. W. ALEXANDERSON, consulting engineer of the General Electric Company and the Radio Corporation of America, in an address at the annual dinner of the Sigma Xi Society at the Hotel Astor in New York City, last April, predicted that the radio wave would soon be used for the control of vast amounts of power, and would supersede much of the cumbersome machinery now used in power production and transmission.

"The electric power industry cannot remain much longer untouched by the discoveries of radio," he said. "It is just waiting until this new knowledge has been widened and matured, so that it can be put into use on a wider scale, and this is the real significance of the entrance of the electrical industry into radio, and the latest branch of it, television."

Ten days after Dr. Alexander's startling prediction, electric lamps, held or suspended in the air without any connection to power wires, were made to glow brightly when high frequency waves were directed upon them in a demonstration of power transmission by radio by two Westinghouse engineers, Dr. Phillips Thomas and Dr. Harvey C. Rentschler, before the New York Electrical Society in New York City. Dr. Rentschler also displayed a novel radio furnace, in which metallic tungsten, among the most infusible of all metals, was heated white hot in an instant by the radio waves.

"We may visualize," said Dr. Thomas at this demonstration, "a parallel beam of radiation ten centimeters (four inches) across, along which is being sent ten kilowatts of energy. What sort of effects shall we find? Will this be the means for delivering energy for heat and light to individual houses? Dr. Nikola Tesla had a similar idea several years ago. Later improvements in the radio art make it interesting to consider such a possibility once more."

Guglielmo Marconi, inventor of the Marconi wireless system, while visiting this country last October, for the first time in several years, delivered an address on radio before a notable gathering of scientists at the Engineering Societies Building in New York City, in which he said:

"I hope I will not be thought too visionary, if I say that it may be possible that some day electric waves may also be used for the transmission of power, should we succeed in perfecting devices for projecting the radiation in parallel beams in such a

manner as to minimize their dispersion and diffusion into space."

Dr. Nikola Tesla, one of the earliest pioneers in wireless, inventor of the alternating current system of power transmission, the induction motor, and many other notable electrical devices, the day before Marconi made the foregoing appeal "not to be thought too visionary," wrote a modest but direct statement of what he has already accomplished. Dr. Tesla said:

"The transmission of power without wires is not a theory or a mere possibility, as it appears to most people, but a fact demonstrated by me in experiments which have extended for years. The recent demonstrations of a number of experts with very short waves, have created the impression that power will be eventually transmitted by such means. In reality, experiments of this kind are the very denial of the possibility of economic transmission of energy. No concentration of energy such as I attain in my wireless power system can or will ever be achieved through the instrumentality of reflectors, for in transmitting energy in this manner the receiver can collect only an amount proportionate to the area exposed to the rays, while in my system it draws the energy from an immense reservoir in ever so much greater quantity. My plans for a power plant have been developed to the point of application, and I am using every effort to give to the world this, my best and most important work, as soon as possible. I have in view a number of places which seem well suited for the purpose, but my warmest wish is to transmit power from Niagara Falls, where the first triumph with my alternating system was achieved."

And meantime the entire world, with its vast resources of electrical energy in inland lakes, rivers and waterfalls, coal, wind, ocean waves and heat of the sun going to waste in billions of horsepower every day, waits patiently while radio scientists monkey with bulbs and reflectors to carry giant loads of chained lightning. It is about time some of them wake up to the fact that while they are shuffling around with little short-wave reflector sparks, Dr. Tesla has experimented with tremendous electrical power flashes, each more than one hundred and fifty feet in continuous length, under perfect wireless control. Dr. Tesla has said so himself, his veracity is unquestioned, and his record of great accomplishments thus far backs him up. The "big business" end of the electrical industry ought to dig Dr. Tesla out of his laboratories long enough to say to him "Show me!" for there is enough money in it to suit even the wildest dreamers of Wall Street if he is right.

A Logical Discussion on the Transmission of Power by Radio

Experimenters Have Been Devoting a Great Deal of Their Time Trying to Solve This Problem

By KENNETH M. SWEZEY

RADIO has sprung unusually fast from technical obscurity to a popular utility, through broadcasting, and to many it seems to have reached its limit of perfection and usefulness. Transmitting stations have arisen in numbers sufficient to intermesh their waves in a blanket which covers every acre of the country. Receiving sets are so thick that their antennae spider-web the horizon line. The broadcast programs are in portions of the cycle above the reproach of the most fastidious. What more could one want? What more is possible?

In answer to those questions the echoes of a dozen unsolved problems assert themselves. How can static be eliminated? Who will pay for future broadcasting? When can the owner of a set be freed from technical worry? How can receiving set upkeep be minimized? How can distortion be done away with? What are the limiting factors of super-power?

Important Question

The question of who will pay for casting is an old one, and many have answered it. The people who use the sets, of course, always pay; no matter what distribution or collection system is used. It resolves itself to a question, rather, of how, and what expense will be paid. At present the cost of sets and parts, and of received merchandise through electrical

As it stands, the system is backwards. For all the power that is used in the six hundred or so transmitting stations of the country, at least twenty times as much is used in the aggregate of receiving sets. Perhaps this before has been overlooked but it stands out defiantly. Assuming that the six hundred stations broadcast with an average of 1,000 watts, and that two million tube receiving sets consume an average of 6 watts each—which is low, by the way—then a total of 600,000 watts would be propagated and a total of 12,000,000 watts be used to make it audible at the receivers.

A Possible Solution

That fundamental weakness is responsible for the necessity of five and eight tube sets—those expensive white elephants which advanced fans must now have in order to meet certain particular requirements. If appreciable power could be conveyed to the receiving set, a single tube, or even a crystal, could do the work of an eight-tube super-heterodyne, at the same time securing greater ease of control and less distortion. The works of a hen would need not cost more than \$15, and what upkeep expense would be chiefly for the actual

and the maintenance of a tube set—tubes and battery cost

If but less than a single watt were available at the receiver no tubes would be needed, even for operating a loud-speaker. If energy could be transmitted efficiently a total of 2,000 kilowatts would suffice for all our present needs and could be sent from four super stations of 500 kilowatts each.

Then, with the best of paid talent the annual cost of both the transmitting and receiving set upkeep could well stay below \$15,000,000.

But with our present system this is obviously impossible. The waves sent out are chiefly radiations, and because they are such the greatest part of their energy is irrecoverably lost.

Beam Transmitter

By concentrating the waves into a beam the recoverable energy is increased, but in the same degree the usefulness as a broadcast transmitter is decreased, for the area over which the waves may be intercepted is restricted.

It is this lack of power weakness that is also the main cause of static trouble. Atmospheric electricity will always be with us, and its nature is so closely allied to that of radio waves that it cannot be eliminated in any practical way so long as its intensity approaches and exceeds that of the impulses that are wanted. The only satisfactory solution to the problem is to be in increasing the available

particular point. The ones that are greatest always win.

Distortion, too, is due chiefly to a lack of antenna energy in the receiving set, for it comes through the inaccurate repeating of regeneration, through small differences in tube characteristics and through interstage transformers. If there was the energy available at the antenna that is now available at the output of the last tube the amplifier could be eliminated, and with it the distortion that it produces.

One often reads in the press the announcement that some one at last has found means to send power by radio. If it were true the industry of the world would be revolutionized. As facts stand, this has not as yet been practically accomplished. Lamps can be lit by the radiations of the ordinary transmitter over very short distances, but the efficiency is so extremely small that commercial promotion of the phenomenon would be ridiculous.

Nikola Tesla was the first to try to solve the problem, and if success is ever achieved it will doubtless be by his system, into which he has put so much tireless labor. Professor Helmholtz, Lord Kelvin and a number of able contemporaries believe the plan entirely feasible if apparatus could be developed to generate and control the proper kind and intensity of electricity. Tesla has long since done this, and the system seems only

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Important Question

The question of who will pay for broadcasting is an old one, and misleading. The people who use the sets, of course, always pay; no matter what distribution or collection system is used. It resolves itself to a question, rather, of how, by what specific means, will the expenses of broadcasting be paid. At present the sale of sets and parts, and of general merchandise through ethereal advertising,

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The cost of bare maintenance of a three-tube set—tubes and battery cost—may amount to about \$20 a year. But

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Reason for Failure

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INVENTOR

Radio

Next

WE

5

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Human Transmitter

By concentrating the energy in a human transmitter, the energy could be sent out in a more direct line, and for the area covered by the transmitter, the energy could be intercepted and received.

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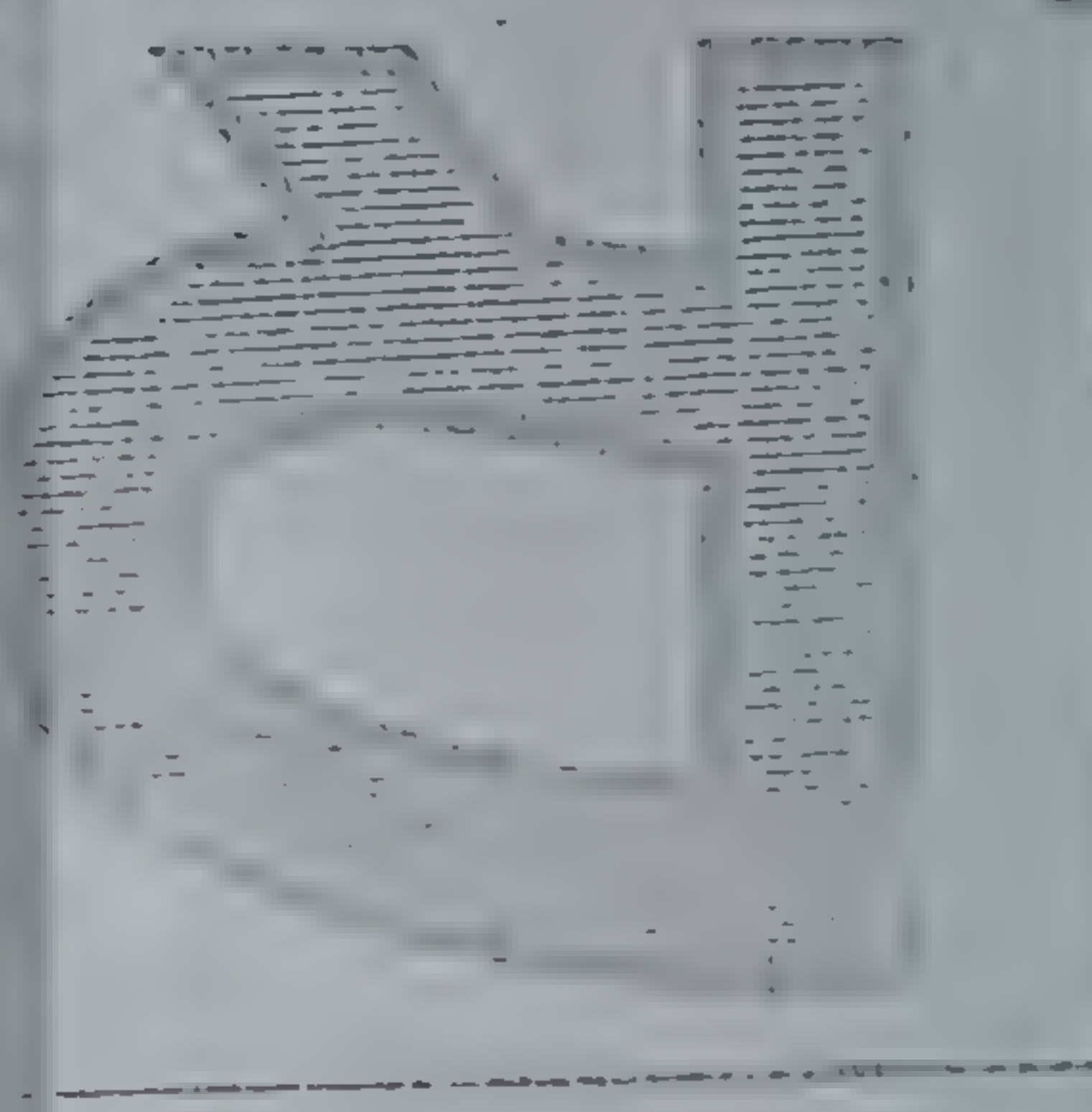
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INVENTOR

Radio



NEXT

By James S. Gault
Editor, A. I. E. E.
Copyright, 1924, New York Evening World
Company.
LIGHT, heat and power without it
reaching the state of complete
Tesla broke silence of many
his perfection of his system for the
without wires. By means of this
power to run ships, airplanes and
critical machinery. He is now making
the invention of his revolutionizing
the world. The University of Chicago
and the University of Illinois
and the University of Michigan

RADIO

NEW YORK, SATURDAY, JANUARY 15, 1922

Radloed Light, Heat and Power Perfected by Tesla

INVENTOR ANNOUNCES FINAL SUCCESS OF EXPERIMENTS
BEGUN THIRTY YEARS AGO

By James S. Caulfield
Assoc., A. I. E. E.

NEW YORK, Jan. 15.—Nikola Tesla, the inventor of the radio, today announced the final success of his experiments in the use of radio waves for the transmission of light, heat and power. He said that he had perfected a system of "radloed" light, heat and power, which he had been experimenting with for thirty years. He said that the system was based on the principle of resonance, and that it was the most efficient and economical system yet devised. He said that the system was capable of transmitting light, heat and power over long distances, and that it was the only system of the kind that had been perfected. He said that the system was the result of his long and arduous work, and that it was the culmination of his life's work. He said that he was proud to announce the final success of his experiments, and that he was confident that the system would be widely adopted in the future.



Special Features

- A New Reflex Circuit... Page 3
- A Night With Will Johnstone and the Radio Artists... Page 5
- An Efficient Australian Circuit... Page 10

After an interview with the inventor, the writer learned that the system was based on the principle of resonance, and that it was the most efficient and economical system yet devised. He said that the system was capable of transmitting light, heat and power over long distances, and that it was the only system of the kind that had been perfected. He said that the system was the result of his long and arduous work, and that it was the culmination of his life's work. He said that he was proud to announce the final success of his experiments, and that he was confident that the system would be widely adopted in the future.

His passion for the new is intense. Naturally of an extremely energetic disposition, he has been constantly at a feverish tension. His wild power to do enormous work, his power to concentrate and make his desire a reality, and his laboratory and workshop...

On close inspection his ideas will be found to be twenty-five to one hundred years ahead of time. Here is an example: Back in 1891 The Evening World printed an exclusive interview with Tesla, at which time he stated that the power of Niagara Falls would be developed. The public thought light of it and in a short time it was forgotten. However, some years later the Falls were developed and at the present time plans are being made to transmit power from Niagara to supply the New England States.

In the same year Tesla, through the medium of the paper, announced that he had developed a system of communication for ships at sea. This was three years earlier than the famous Marconi's experiments. Other...

WEEK-END BROADCAST PROGRAMS—PAGES 7 AND 10

Electricity is a youthful giant. Not yet do we know its power.

WHAT WE WILL DO WITH ELECTRICITY

BY
NIKOLA TESLA

WITH DECORATIONS BY

R. F. HEINRICH

ANY a would-be discoverer, failing in his efforts, has felt the regret to have been born at a time when everything has been already accomplished and nothing is left to be done. This erroneous impression that, as we are advancing, the possibilities of invention are being exhausted, is not uncommon. In reality it is just the opposite. Spencer has conveyed when he likened civilization to a light which a lamp throws out in the darkness, the lamp and the larger greater is its dark boundary. It is to say, that the more we know, the more we become in the absence of light through enlighten-ment, conscious of our limita-tions, and the gratifying re-sults of the continuous progress of the future prospects. We are going on but the truth is that we have been broken. What we are doing is nothing but a waste of time and money. There are now innumerable ways which are being tried and many of them are failing. So great are the failures that whenever an engineer advises

and mineral oil, the annual loss of which amounts to hundreds of millions of dollars. In the very near future such waste will be looked upon as criminal and the introduction of the new methods will be forced upon the owners of such properties. Here, then, is an immense field for the use of electricity in many ways, vast industries which are bound to be revolutionized through its extensive application.

To give another example, I may refer to the manufacture of iron and steel which is carried on, in this country, on a scale truly colossal. During the last year, notwithstanding unfavorable business conditions, 31,000,000 tons of steel have been produced. It would lead too far to dwell on the possibilities of electrical improvements in the manufacturing processes themselves and I will only indicate what is likely to be accomplished in using the waste gases from the coke ovens and blast furnaces to generate electricity for industrial purposes.

Since in the production of pigiron, for every ton about one ton of coke is employed, the yearly consumption of coke may be put at 31,000,000 tons. The combustion in the blast furnaces yields, per minute, 7,000,000 cubic feet of gas of a heating value of 110 B. T. units per cubic foot. Of this total, without making special provision, 4,000,000 cubic feet may be made available for power purposes. If all the heat energy of this gas could be transformed into mechanical effort it would develop 10,350,000 horsepower. This result is impossible but it is perfectly practicable to obtain 2,500,000 horsepower electrical energy at the terminals of the dynamos.

Utilization of Waste Gases.

IN the manufacture of coke approximately 9,400 cubic feet of gas are evolved per ton of coal. This gas is excellent for power purposes, having an average heating value of 600 B. T. units, but very little is now used in engines, largely because of their great cost and other imperfections. A ton of coke requires about 1.2 tons of American coal, hence the total coal consumption per annum on the above basis is nearly 10,000,000 tons, which give, per minute, 1,000,000 cubic feet of gas. A cubic foot of gas, or rich gas, has a heating value of 100,000 cubic feet could be used in gas engines. The heat contents would be, theoretically, sufficient to develop 5,660,000 horsepower of which 1,500,000 horsepower could be obtained in the form of electric energy.

I have devoted much thought to this important proposition and find that with new,

efficient, extremely cheap and simple thermodynamic transformers not less than 1,000,000 horsepower could be developed in electric generators by utilizing the heat of these gases, which, if not entirely wasted, are only in part and inefficiently employed.

With systematic improvements and refinements much better results could be secured and an annual revenue of \$50,000,000, or more, derived. The electrical energy could be advantageously used in the fixation of atmospheric nitrogen and production of fertilizers for which there is an unlimited demand and the manufacture of which is restricted here on account of the high cost of power. I expect confidently the practical realization of this project in the very near future and look to exceptionally rapid electrical development in this direction.

WATER-POWER offers great opportunities for novel electrical applications, particularly in the department of electro-chemistry. The harnessing of waterfalls is the most economical method known for drawing energy from the sun. This is due to the fact that both water and electricity are incompressible. The net efficiency of the hydro-electric process can be as high as eighty-five per cent. The initial outlay is generally great but the cost of maintenance is small and the conveniences offered ideal. My alternating system is invariably employed and so far about 7,000,000 horsepower have been developed. As generally used we do not get more than six hundredths of a horsepower per ton of coal per year, this water energy is therefore equivalent to that obtainable from an annual supply of 120,000,000 tons of coal, which is about twenty-five per cent of the total output in the United States. The estimate is conservative and in view of the immense waste of coal, fifty per cent. may be a closer guess.

We get better appreciation of the tremendous value of this power in our economic development when we remember that unlike fuel, which demands a terrible sacrifice of human energy and is consumed, it is supplied without effort and destruction of material and equals the mechanical performance of 150,000,000 men—one and one-half times the entire population of this country. These figures are imposing, nevertheless, we have only begun the exploitation of this vast national resource.

There are two chief limitations at present: one in the availability of the energy, the other in its transmission to distance. The theoretical power of the falling water is enormous. If

...the inventor. This man is a
...he has virtually secluded himself in New York in a
...life of solitude so as to be able to devote all his time
...and energy to the perfection of his wireless system of
...power transmission. In describing the system which
...is capable of operating at great distances and all kinds of
...in circuits, he said: "Not only is this possible, but I
...am confidently expecting that by far the greater
...amount of energy will be transmitted in the
...future than has been thus far developed and ex-
...perimentally, but most of the system is still un-
...der development. They claim that the power would be transmitted
...in all directions and consequently most of it would be
...lost, the same as in the operation of radio receiver.
...That is a fundamental mistake.

"It is true that my transmitter produces an effect
...all over the globe, but it is only force that is conveyed
...to every point and not energy. To make this under-
...standable to the layman, suppose that the earth were a
...hollow reservoir into which water is forced by a pump.
...It does not require much scientific knowledge to per-
...ceive that the pressure will exist everywhere, yet no
...energy will be consumed. But the moment this reser-
...voir is tapped and the water permitted to drive an
...engine, energy is derived from the pump. In my
...system energy is released by something like a combi-
...nation lock, and only those who have the combination
...can draw from the source.

"In my original experimental demonstrations I have
...made great improvements and I can now definitely
...announce that the loss in the transmission to the
...greatest terrestrial distance—say 12,000 miles—will not
...amount to more than one-quarter of 1 per cent. This,
...of course, does not take into account certain unavoid-
...able losses in the transmitter and receiver, which will
...amount to about 4 per cent. in the aggregate. In the
...present method of conveying energy through wires
...the loss amounts often to 20 per cent. or more, and the
...distances are limited."

The writer asked Prof. Tesla if it was possible to

Tesla's Tower at Shoreham, L. I.

construct such a plant and actually operate it. He re-
...plied: "Most certainly, for I have developed all the
...details." He also stated that he expected to commence
...construction very shortly and entirely on his own
...resources. He was asked if the energy transmission
...was accomplished by the use of radio waves, which are
...sometimes called Hertzian waves. He answered:

"It is quite impossible to transmit any appreciable
...amount of energy by such means if it were not but
...for one reason—that waves such as Hertz thought to
...have discovered do not exist. It is true that some kind
...of energy is radiated from the wires, but it is not in
...the form of transverse waves in the ether. Moreover,
...this energy is irretrievably lost.

"I will illustrate by an example: Suppose that two
...wires are led from a generator of alternating currents
...and used to light an incandescent lamp at some dis-
...tance. If the alternations of the current are very slow
...there will be virtually no energy radiated from the
...conductors. Imagine now that the current is made to
...pulse faster and faster. Then in the same measure

ionization caused by the sun's rays. This is the
...oscillations—human speech and other
...transmitted through the earth for
...any artificial cable or conductor. Experience shows
...this to be the case." Tesla was asked if the wireless
...system would eventually supplant cables. "I would
...say, yes, eventually, but so long," he added smilingly,
...as the art develops along the present line, my Irish
...Machay needn't worry about his."

The illustrations show the ultimate Tesla wire-
...less Power Plant. In his early endeavors the inven-
...tor erected the tower shown in the photograph primarily
...to prove his theory. However, the war was upon us
...and the Government requested that it come down.
...After the war Prof. Tesla had no more to say for his
...theory, but this time he chose to build a power plant
...location of his laboratory. It was while at the
..."Springs" that he first demonstrated power trans-
...mission without the aid of wires.

U. S. Radio Anglicizing Language of the World

BROADCASTING was born in America, and it is
...natural that this country should lead the world
...in this art and its related industries. Many
...of the 361 broadcasting stations, however, are not
...satisfied with transmitting radio programs throughout
...the North American Continent. Some of the fifty
...high-powered Class B stations, all of which are rated
...at 500 or more watts, and nine out of 1,000 radio
...power, are ambitious to entertain the whole world.
...This long-distance broadcast is a startling one
...of the English language proficiency.

Some think it probable that within a few years
..."British" may come to be the universal language
...through the use of the radiophone. Commercial and
...the use of the radiophone in English also

sular possessions, an extensive broadcasting net carry-
...ing Anglo-Saxon around the world is predicted. An
...international language will have to be developed. If
...English, of the 55-called universal languages, Espe-
...ranto or Pidgin will not suffice, Mr. Whittenburg points
...out.

Trans-oceanic reception of United States broadcasts
...began last year, and now almost every night one or
...two American stations are heard in Baghdad and
...Paris. American stations have also been reported
...in Hawaii. Broadcasting from the States is heard
...regularly in Alaska, and every once in a while the
...acknowledgment of a broadcast comes from distant
...points in South America. A broadcast from Chicago
...intended for the Arabs was reported as received in

abroad, international radio broadcast is carried on
...Europe to-day.

In Great Britain, where more American stations are
...heard than those of any other foreign country, listen-
...ers have an advantage over those on the other side
...of the Atlantic. Radio waves travel far better in the
...night than in the daytime and so this power is
...soldiered here. Though the night is the best time for
...radio, all-day broadcasts are made in England.
...The British Broadcasting Corporation is the largest
...model of the world's radio stations. On
...when it is 8 P. M. in London, the
...in London. The British Broadcasting Corporation
...does not have a station in America, but it has
...a very effective station in New York City. GS

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The Radio Beginner's Series

Continued from page five

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be no better, for there could be no more honestly apportioning the call.

If there were but two or three manufacturers—and that is perfectly feasible if apparatus could be developed so that it could be standardized—and four or five broadcasting stations for the entire country, the question of payment for broadcasting could be more satisfactorily met. Apparatus could be rented, like Bell telephones, or sold outright, like standard typewriters, and the user could at all times be sure of reliable maintenance service. The several broadcasters could afford to furnish the best of programs, for they would have a definite and continuous source of revenue.

Distance Wave May Travel

Undoubtedly, with transmitting and receiving apparatus which we have immediately at hand, this could be accomplished with passable success. But the equipment would be expensive and tremendously limited. Super-power would have to be used at the transmitter, and the sensitivity of the receiving sets increased with the increase in distance. As the distance which a Hertz wave transmitter may cover varies approximately with the square of the power used, it is obvious that the wattage would have to exceed that now in use manyfold. Unless the wave lengths that were used were widely separated, receiving sets within the vicinity of these powerful transmitters would be interfered with beyond remedy.

In true radio transmission it would seem to the writer that a goodly portion of the transmitted energy should be recoverable. In our present system it is almost a total loss. One could realize this more fully if all receiving sets had only crystals. From the most powerful of modern transmitters scarcely ever can a crystal set receive satisfactorily over more than a hundred miles. If it had not been for the invention of the vacuum tube detector, oscillator and amplifier the entire system would have been long ago pronounced a failure, or at least relegated to a limited commercial and ship-to-ship code service.

currents and drain a large B battery in a time. Even as it is, the UX-110 takes 125 volts on the plate, requires a 100-volt operating voltage, and a B battery of 45 volts to hold the plate current down to 10 milliamperes. The plate current is one or four times what the UX-110A requires, quarter the voltage, and at any rate. The UX-210, even at 90 volts, has a normal operating grid voltage of 4.5 volts. The UX-120, a more efficient tube, requires 125 volts on the plate, requires a 100-volt operating grid voltage of 2.25 to 2.5 volts, plate current drain is 6.5 milliamperes. The UX-112 at 90 volts on the plate requires six volts on the grid. All three of the new tubes are C battery tubes, while on the present tubes in use the C battery is a refinement and economy measure much advocated, but not used by any great percentage of set owners.

Reducing B Battery Current

Another way of securing amplification with a minimum of B battery drainage is the so-called "tone filter amplifier" in (1) of the figure. Here the coupling between the tubes is in the millions of ohms, variable leaks being used both for tube coupling and for grid leaks. Very low plate potential is used on the detector and, because of the tremendous resistance of the coupling, there is substantially no B bias on either of the next two tubes, but 90 volts on the last tube. The stopping condensers are .0005-mfd.

In place of either leaks, resistances, choke coils or transformers, the writer has frequently used and suggested coupling two tubes with a third tube, using the plate to filament resistance of the third tube as a coupling resistance, the diagram being shown at (2). Here we have a detector with one step of straight transformer-coupled audio. The first audio tube is coupled with the second audio tube through a tube placed between them as a resistor. This tube requires a separate A battery, as shown. It cannot be used with the same A battery as the

other tube. This is a novel use for the tube. The plate of the first tube is connected to the plate of the second tube, and the filament of the first tube is connected to the filament of the second tube. The filament of the third tube should be large, as in some cases supply upward from .5 mfd. to 2 mfd. being preferable, although as low as .01 will do well.

This is a novel use for the tube. The 90 volts shown not only increases the resistance tube, but it passes through the tube and applies on the plate of the first audio tube. Of course, instead of 90 volts you can use up to 150 volts with benefit. Moreover, it is not essential to have a stage of transformer coupling precede this, and next week we will finally come around to the constant current amplifier, which is based on this simple tube resistance coupling with provisions for impressing a signal voltage on the resistance tube. At that time also we will reprint the diagram for a push-pull amplifier to complete the record.

Many times in the past we have printed the diagram for choke coil amplification. This is identical with the last two diagrams of last week's page, except that choke coils are used in place of resistance couplings. Many devices have been impressed into use as choke coils for this purpose. The secondary of an audio transformer, the primary of a bell ringing transformer, the Ford spark coil, various magnet windings, have all been used. Probably better than any of these is an audio transformer with primary and secondary connected in series, aiding, making one coil of the two. You will have to reverse the connection between primary and secondary to be sure they are in the right order, but it makes no difference which end is connected to B battery and which to plate. A blocking condenser and a leak must be used as in resistance coupling.

By using the Tesla system, the energy can be recovered with a loss. Distance need not be reckoned any more than it need be reckoned in a wire circuit with negligible resistance. If Tesla's system works as well practically as it does theoretically, the solution to broadcasting will go far toward relieving all those problems which were first suggested. It would permit of super-power transmission, with all of the good qualities and none of those that now put a limit to its effectiveness.

Pumping System

In his radio transmitter Tesla mounts a huge capacity battery ideal enveloping surfaces that prevent radiation, or loss of a tower and starts up an electrical pumping system, pumping electricity in and out of the earth. The pressure distributes itself over the entire globe, though it were a sphere of but minor dimensions, and by using receiving parabolic at different parts of the globe connected at one end to the earth and the other to a similar but smaller coil, the energy can be recovered with a loss. Distance need not be reckoned any more than it need be reckoned in a wire circuit with negligible resistance.

If Tesla's system works as well practically as it does theoretically, the solution to broadcasting will go far toward relieving all those problems which were first suggested. It would permit of super-power transmission, with all of the good qualities and none of those that now put a limit to its effectiveness.

Notwithstanding the development of hundreds of new circuits, there has not been a single basic and radical improvement on our present radio system since De Forest invented the three-element vacuum tube. Props have been designed and both transmitting and receiving sets have been pushed to the limits of their capacity, but as for something really new it has yet to appear. The condition is a definite indication that the point of the flattening of the curve has been reached.

To Control Precipitation of Moisture.

In the great departments of electric light and power immense opportunities are offered through the introduction of all kinds of novel devices which can be attached to the circuits at convenient hours for the purpose of equalizing the loads and increasing the revenues from the plants. I have myself knowledge of a number of new appliances of this kind. The most important among them is probably an electrical ice machine which obviates entirely the use of dangerous and otherwise objectionable chemicals. The new machine will also require absolutely no attention and will be extremely economical in operation, so that the refrigeration will be effected very cheaply and conveniently in every household. An interesting fountain, electrically operated, has been brought out which is likely to be extensively introduced and will afford an unusual and pleasing sight in squares, parks, hotels and residences. Cooking devices for all domestic purposes are being provided and there is great demand for practical designs and suggestions in this field. The same may be stated of electric signs and other attractive means of advertising which can be electrically operated. Some of the effects which it is possible to produce by electric currents are wonderful, and lend themselves to exhibitions, and there is no doubt that much can be done in that direction. Theaters, public halls, and private dwellings are in need of a great many devices and instruments for convenience and offer ample opportunities to an ingenious and practical inventor.

Books have already been written on the agri-

WE have at our disposal three main sources of life-sustaining energy: fuel, water power and the heat of the sun's rays. Engineers often speak of harnessing the tides, but the dis-

Telegraphic Photograph.

GREAT Improvement in telegraphy and telephony is being effected by a receiving device which and the combination of which is unlimited, will be through serial induction the infinite final result. This is in pen and ink construction. Key, switch, and lamp are in all the other

(the diurnal changes, variation) and "small power of the sun's light" (about one-tenth, or one hundred thousand horsepower per square inch) which we might be able to use in high speed low pressure turbine and horsepower. To do this would mean the installment of a large number of and storage plants so large and expensive that such a project is beyond the pale of the practical. The inevitable conclusion is that water-power is by far our most valuable resource. On this humanity must build its hopes for the future. With its full development and a perfect system of wireless transmission of the energy to any distance man will be able to solve all the problems of material existence. But the greatest is the chief impediment to human progress, will be completely annihilated in thought, word and action. Humanity will be united, wars will be made impossible and peace will be made permanent.

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
2. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
3. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
4. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
5. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
6. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
7. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
8. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
9. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
10. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

113

10

1. *Staphylococcus aureus* (Staph. aureus) is a Gram-positive, spherical bacterium that is commonly found on the skin and in the nose of humans and animals. It is a facultative anaerobe, meaning it can grow with or without oxygen. Staph. aureus is known for its ability to form a protective biofilm, which makes it resistant to antibiotics and disinfectants. It is a common cause of skin infections, such as abscesses and boils, and can also cause more serious infections like pneumonia and sepsis.

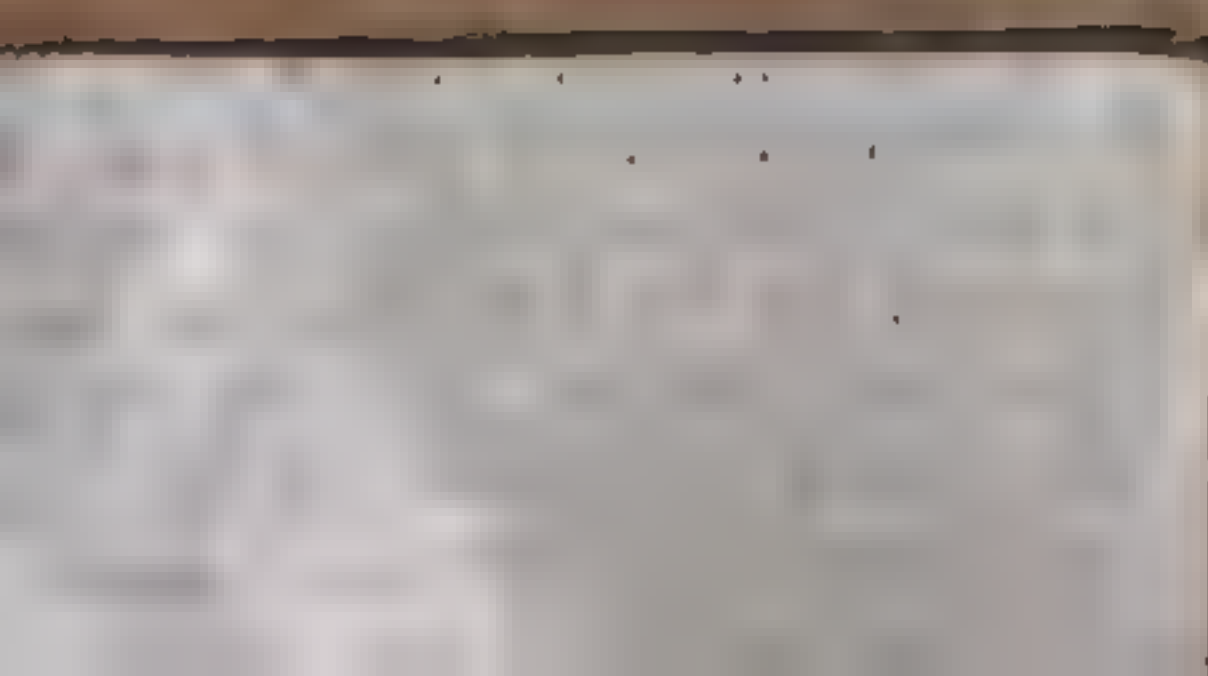
On this humanity
 waiting, lying for the enemy

CLOSEST FRIEND A DUKE.

22 MARQUAIS DE ROCHEFORT.

To the Editor of The Tribune.

To the Editor of 'The Tribune.











HYDRO-ELECTRICITY

THE NEW YORK TIMES
JANUARY 1, 1900
LONDON
The following is a translation of the article in the New York Times of January 1, 1900, under the heading "HYDRO-ELECTRICITY".

The idea is to use a vertical shaft to convey a quantity of water and surround it with a thin metal tube about the width of the electric current. Mr. Josiah Latimer Clark, of Glasgow, Scotland, has been successful in this way of conveying electricity, and it is now being used in Glasgow, or through the Atlantic Ocean, or from New York to London, with great success. The power is conveyed in the form of a thin metal tube, and the electricity will greatly cheapen electricity, and a revolution in industrial affairs.—L. J. C.





Tesla - Scherff
Correspondence
(Marie Scherff coll.)

MISS : (copies)

- 1) Tash - Schaff
- 2) ~~SRM/CWC~~

THE WESTERN UNION TELEGRAPH COMPANY.

21,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

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This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

THOS. T. ECKERT, President and General Manager.

7:10 am

NUMBER

REC'D BY

CHECK

103 In 21 Paid

RECEIVED at

Dated

To

New York NY 11th July 12th 190th
George Scherff
C. Tesla Marks M. Cleppe NY

Please mail her specifications transmission
and post Engage men to complete both trunks
soon Tell Towne to be careful in tests

Tesla

Tesla

Works

Scherff

the other
the first

Mr. George Scherff
Tesla Works

Wardenclyffe

L. J.

His present knowledge
he may command with the
the way to the future.

The Waldorf-Astoria
New York.

The Waldorf-Astoria
New York.

Aug. 9. 1902.

Dear Mr. Scherff,

Mr. Page has just told
me that my opponents
attorney has admitted my
priority. In fact it
appears that Terrence
did not do much of
anything beyond conceiving
the idea, and that only
long after I had practiced
it in many ways.

his present knowledge
he may counsel with the
invention in any way. It
is, Dr. Page says - not of
much consequence that he
knows them and therefore
he should only hold fast
on the general facts. He
will have to see Dr. Loren-
son Tuesday morning and
it is possible that we
may find it better that
he see him Monday evening.
Ollip has by preparing
Lorenson for this.
I expect to go out either
to-morrow or Monday but it
is very likely that I shall return
on the same day.

Dear
Mr
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Sincerely
W. T. T. T.

Mr. George Scherff
Teale Works

Wardenclyffe

L. J.

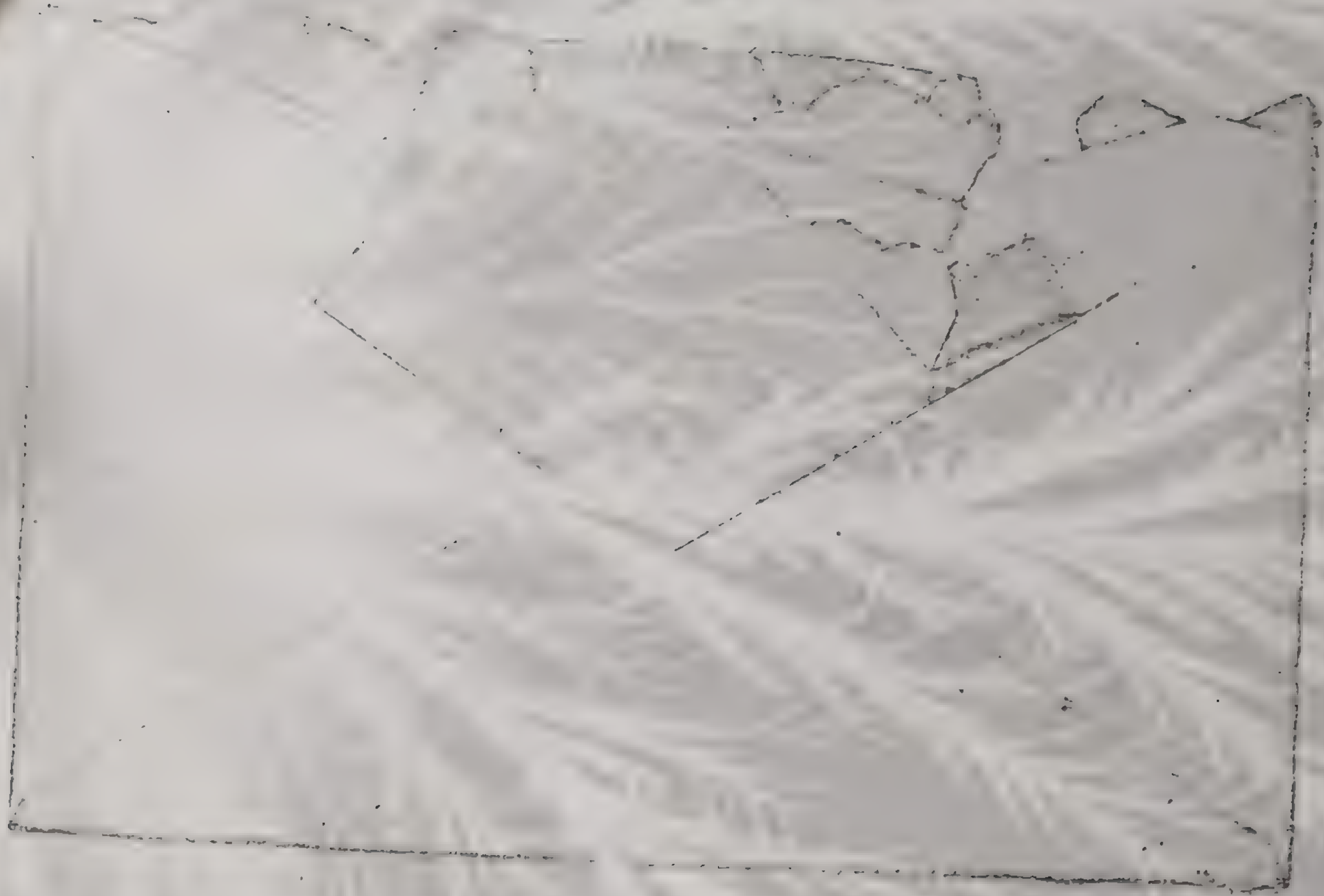
The Waldorf-Astoria
New York.

Aug. 9. 1902.

Dear Mr. Scherff,

His present knowledge
he may connect with the
invention in any way. It
is, Dr. Page says - not of
much consequence that he
knew them and therefore
if he should only hold fast
to the general facts. He
will have to see Dr. Town-
send Tuesday morning and
if it is possible that we
may find it better that
he see him Monday evening.
Oblige me by preparing
to leave him for that.
I expect to go out either
on Monday or Tuesday but it
is very likely that I shall return
on the same day.
Sincerely
H. Teale

Mr. Page has just told
me that my opponent's
attorney has admitted my
priority. In fact it
appears that Townsend
did not do much of
anything beyond conceiving
the idea, and that only
long after I had patented
it in many ways.



Now to say that his appli- to tell you that the
cations are defective and Page wants every possible
that he was some of article which Trenchard has
my patented apparatus. published of any bearing
he must be disappointed however remote on the
of course and I am subject. Please do this
sorry for him although it is possible to know.
you know he has written ^{to not} overlook daily
some articles which were papers although they are
not very nice. of smaller importance.
her I write part of all Lorenstein's testimony is not
because I know that is essential now but tell
would please you to tell him to collect in his
that my know as the thought is clear is possible
originator of the principle everything I told him and
corrected and also everything I did that with

Sept. 10, 1902.

Dear Mr. Scherff,

Important matters have made it impossible for me to return speedily as I expected and as Lowenstein may not have enough work for all the men I wish you would call his attention to a change I want to make in the Berkeley house high tension Transformers. The idea is to get all the ends of the high tension windings outside of the tank so as to enable us to make any connection outside. This will be necessary in some experiments.

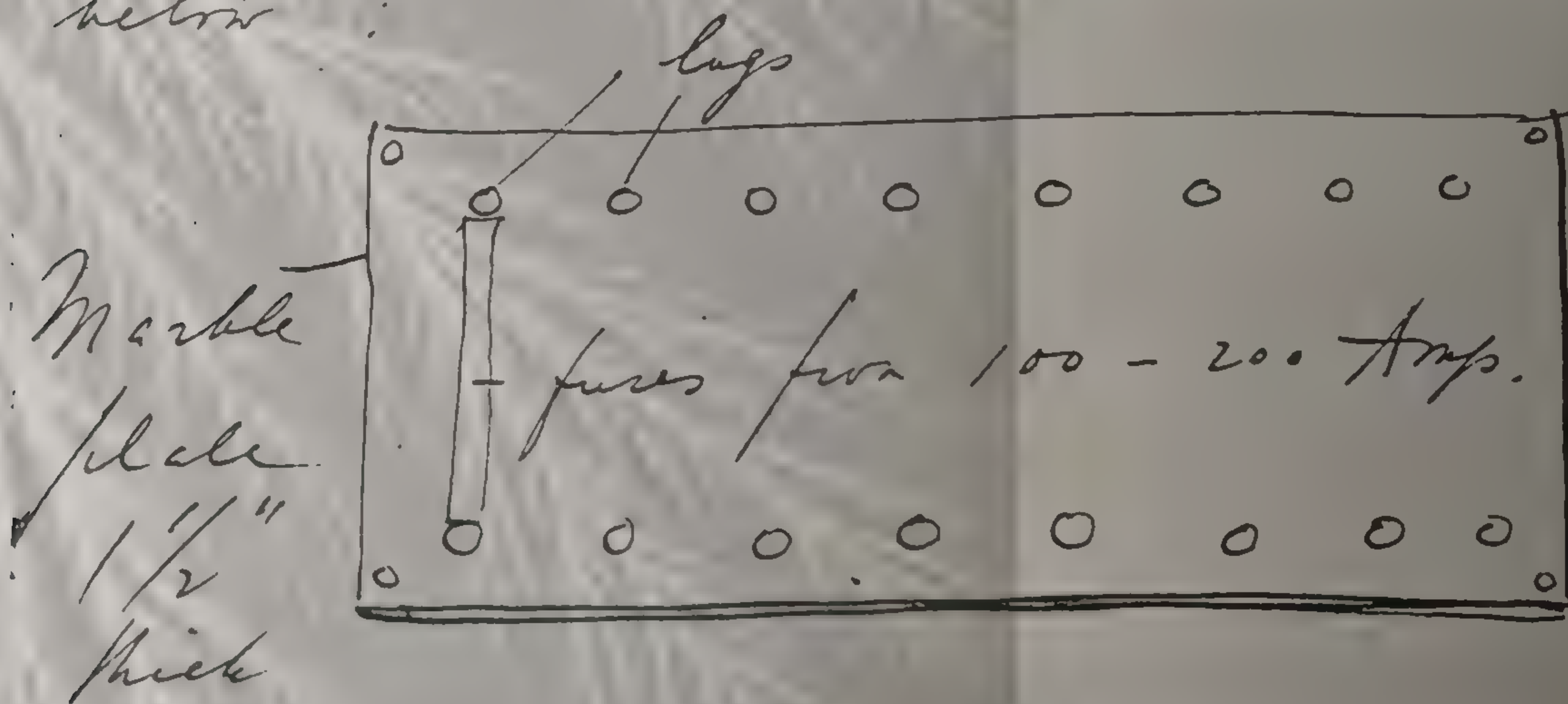
I propose to this end to do away with the present handles for turning the connections in the oil and also with all the paraphernalia on the top of the marble plate and make permanent connections through rubber rods or tubes as illustrated in enclosed rough sketch. For connecting we shall use either special heavy insulated wire or something else. This is for the present unimportant. Mr. Lowenstein should make a drawing of this scheme, but the rubber should not project much above the cover of the tank as we ought to get two such pieces out of one rubber bar. I think about $1\frac{1}{2}$ " rubber should be used.

Sincerely N. Tesla

NY New York OK. 7. 1902.

Dear Mr. Schuff,

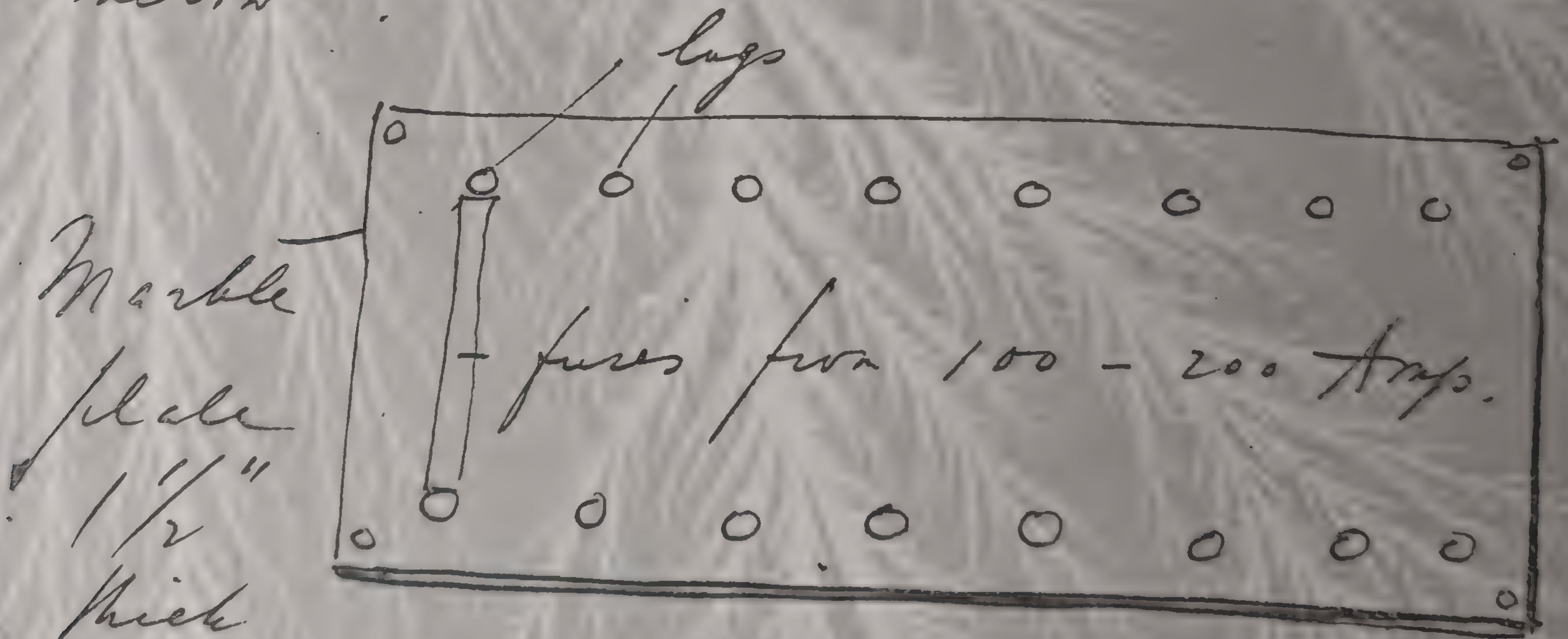
Please tell Mr. Lowenstein
that I have ordered for the
four phases from auto's to
have a Marble plate mounted
with 8 D & W. fuses as
below:



over

New York Oct. 7, 1902.
Dear Mr. Schuff,

Please tell Mr. Lowenstein
that I have ordered for the
four phases from auto's for
lower a Marble plate mounted
with 8 D & W. fuses as
below:



over

This hypothesis can be to the world in the
future to the well as technology might be com-
to the extent and I need around a fare.
Think that Lorenson can At any rate he will
help be able to adopt be able to use this
a plan of connection which knowledge to advantage
would make it easy to be planning the wires.
Make in the laboratory is better to leave the
personnel of the cir- switchboards where they
cut in the wires. For are low.
instance the wires leading Sincerely
V. Teste

Nov. 12, 1902

Dear Mr. Schuyler,

Thank you for the letters
are beginning to be
very well but of course
much to be done for the
2nd conference of the
national committee
and some other things.

Please find enclosed to
Mr. Brewster

L. L. L.

Travelling

at home

My dear Sir,

I have the pleasure

to inform you

that I have

received your letter

of the 10th inst.

and am glad to hear

that you are

well and happy

as ever.

I am, Sir, very

truly yours,

J. B. [Signature]

[Faint text]

any other, $\frac{1}{16}$ - $\frac{1}{8}$ or even more

of 12 blades between 12" long

Ally of [unclear] to [unclear]
[unclear] of [unclear] [unclear]

American
[unclear] 2.
A. and [unclear] [unclear]

P.S. I found that
under custom [unclear]
that you [unclear] the
money. They [unclear] [unclear]
you [unclear] [unclear]

1912

any number $\frac{1}{16} - \frac{1}{8}$ or even more

1/12 blades between 12" long.

Blade of aluminum to show in
some of the possible.

Enclosed

Y. Foster

American

Shower Co.

A. an. Co. Co.

P.S. I found the

under custom binding

the for my new the

money. They will have

you at the Chatham Road

March 5, 1902.

SS,

Dear Mr. Schmitt,

Prof. Barker of Penn. Uni-
versity Morgan Laboratory of
Physics asks me to loan
him one of my Lennard
Jones graphs taken

at St. Louis.

I should like to loan one
or two of them but have left

(They are provided with an
Aluminum cap on the end
please note this) and

This subject. I refer^{ed} to by
lecture at the Academy of Sciences.
There is a drawing showing such
an Alvarado Copper Limestone

5). I also sent you the same
the Philadelphia (Pascagoula) of the
bone! of a bone. I was
taken. Copper as the blue
less frequent. without are
as often. remains of the
the It is a very small
people on the bone of the
has bone as I have seen
other of the bone as I have seen
I shall be at Saturday morning
Dinner & Tea

as I would like to change
Prof Rankin very much)
am sending a message by
L get there before and bring
them & have them in his
old ^{room} at the house. There
Vrepper's house in the corner
again today. The photographs
can take the picture 40 feet and
will get him at 8.30.
Please send of all that takes
with a minimum of copies of Rankin 4)
photographs - I believe there are
212 of them small glass plates
about 4" x 4" I want to show

them frequently in my demonstration
in the laboratory and point out
the things were taken with a
Leica camera (also some copies)
3) Date of my lecture before
N.Y. Academy of Sciences (2
from March 6, 1896. 2) The
any subsequent report in a technical
paper. I think a volume has
contained in the Electrical Engineer
4) My paper in the Electrical
Review dealing with the electric
cable. It was one of my
last - if not the very last contribu-
tion to that Journal on

141

us well
John
is.
-
its
by
my

disks
values



Prof. Barker of Penn. Univ.
 Morgan Laboratory of
 Physics asks me to loan
 one of my Leumann
 spectrographs taken

1000
 I found that I have
 on two of these little life
 (They are provided with an
 Aluminium caps on the end
 piece. Not this) end

Clark has made two hollow
iron cores of disks. These
ought to be insulated with
fibre and tape on top.

1. Murreling has made two boxes
for the two self-induction coils.
These should be mounted on top
of each of the supporting posts all
in a row and the iron cores
should be placed inside.
When the castings come (from pattern
Mr. Murreling made before I went away)
Mr. Beers should fix the two supporting
pipes etc. to lift heavy weights.

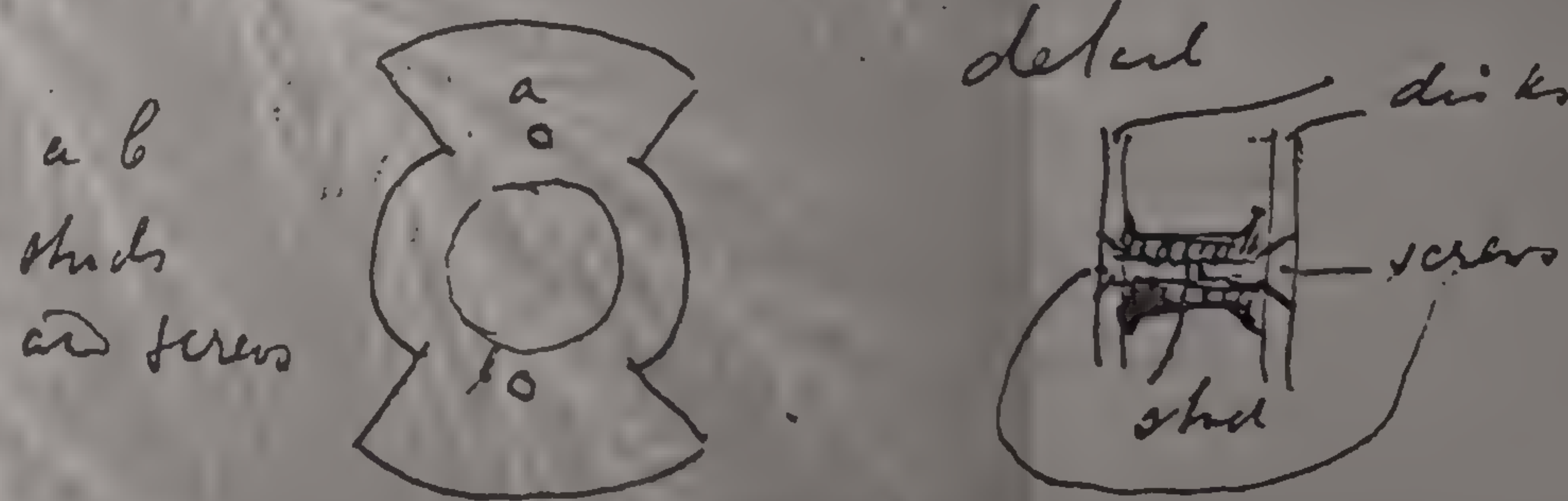
P.S. Status quo ante bellum ^{Ernest} N. Teller

April 14. 1905.

SS
Dear Mr. Scherff,

Letter with pictures received.

I understand that Johnson
is straightening the disks. I
have explained to Hartman
that each pair of disks will
be joined by two studs and
screws diametrically opposite,
like this



April 14. 1903.

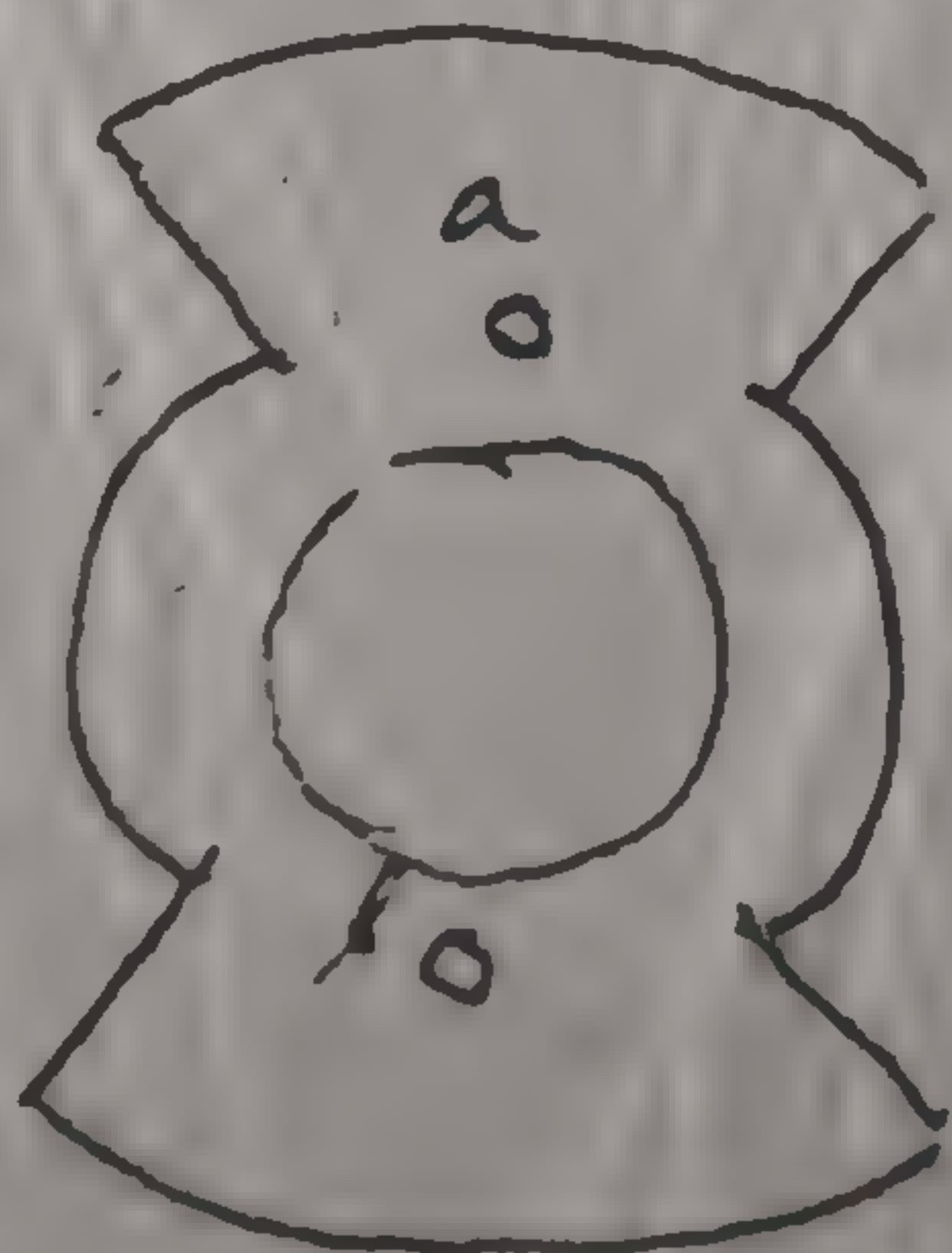
MS

Dear Mr. Schuyt,

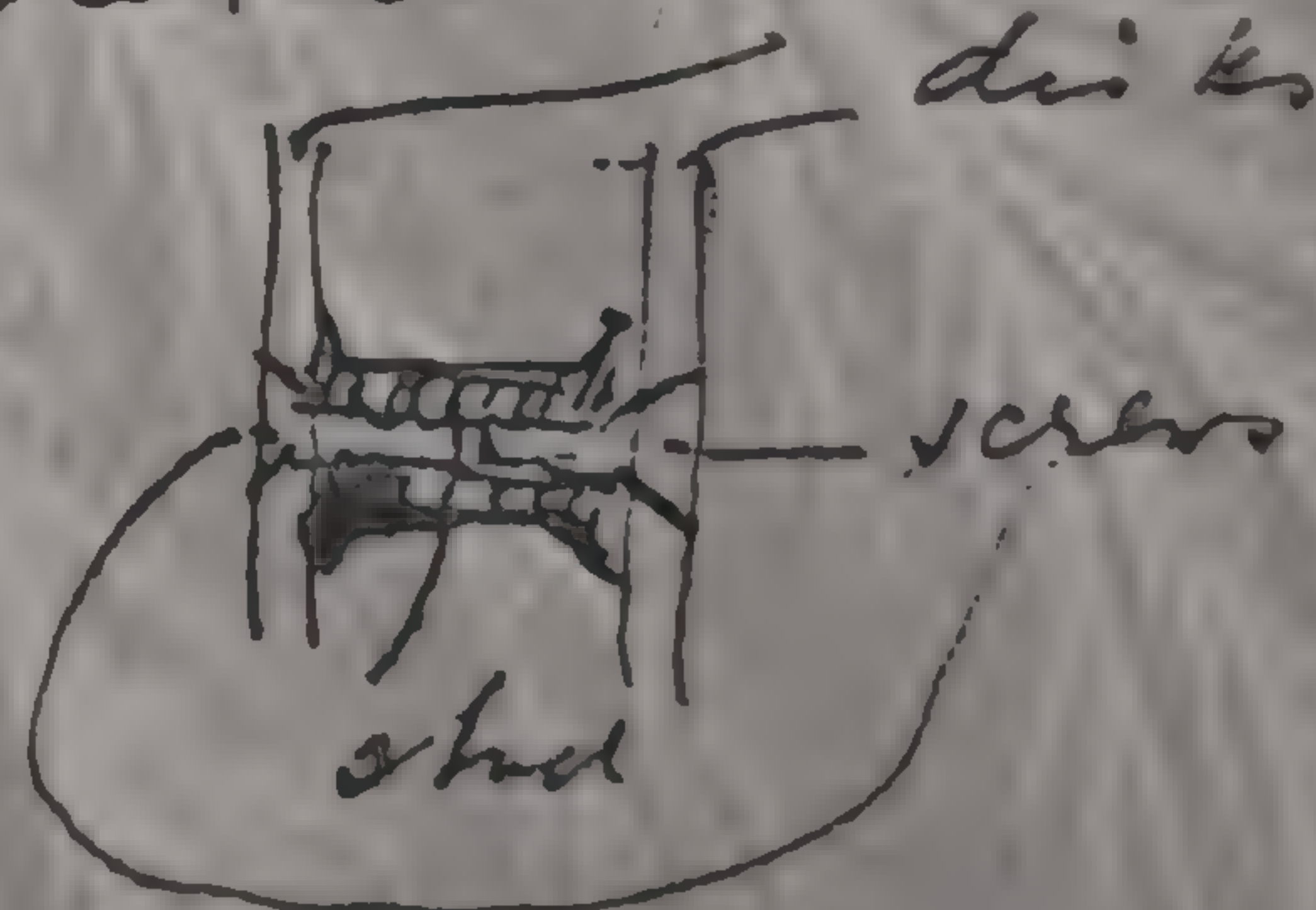
Letter with pictures received.

I understand that Johnson
is straightening the disks. I
have explained to Hartman
that each pair of disks will
be joined by two studs and
screws diametrically opposite,
like this

a b
studs
and screws



detail



Clark has made two hollow
iron cores of disks. These
ought to be insulated with
fibre and tape on top.

Mr. Merrell has made two boxes
for the two self-induction coils.

These should be mounted on top
of each of binding posts at
the end of the iron cores
should be placed inside.

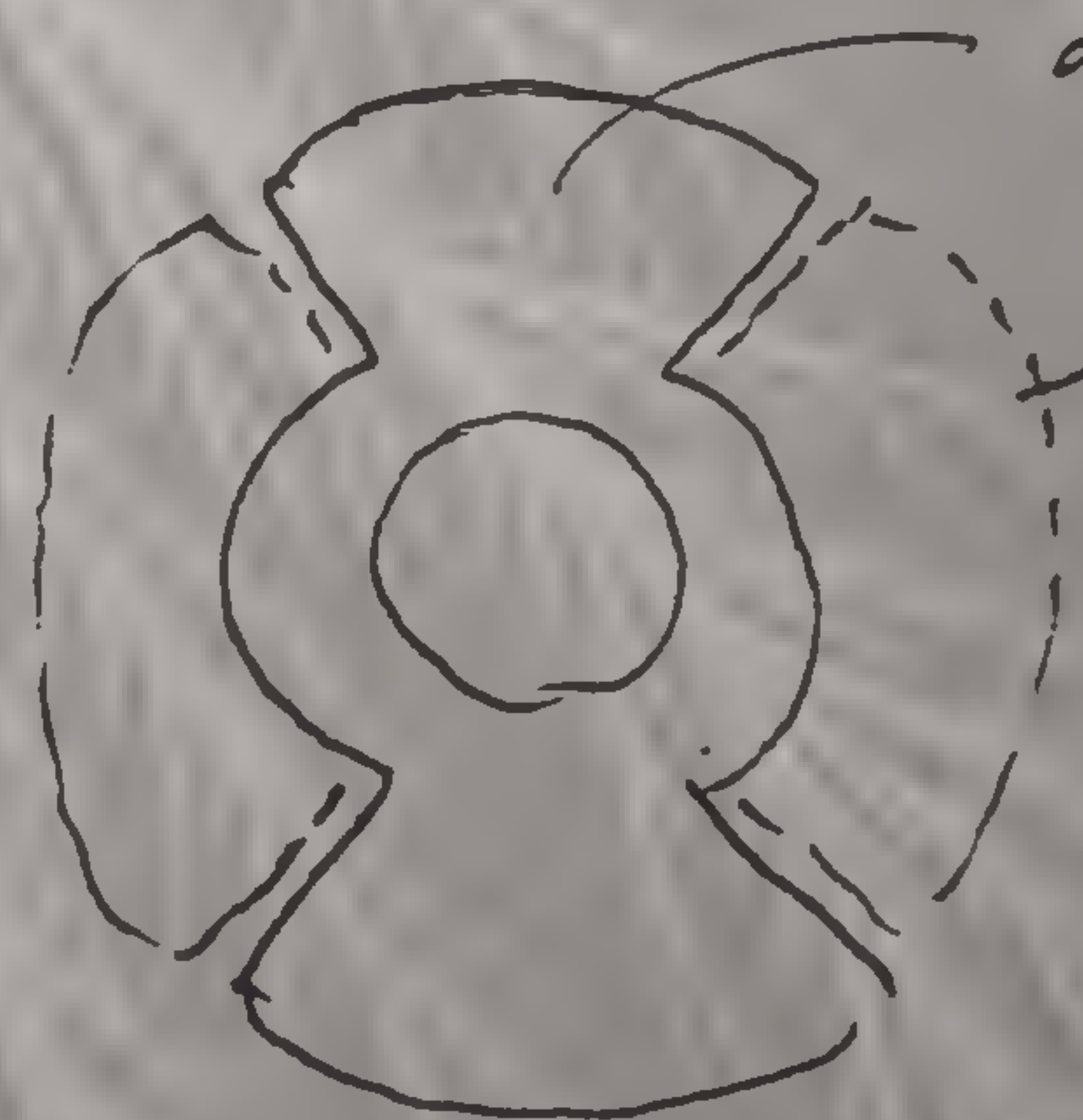
When the castings come (from J. J. Merrell)
Mr. Merrell has made before I went away)
Mr. Beers should fix the two supporting
pipes etc. to lift heavy weights.

P.S. Status quo and bottom - V. Teste

Please tell them that in
the new arrangement the
disks of each pair will
not be as at present
displaced by 90° but
will be placed exactly
alike (not displaced).

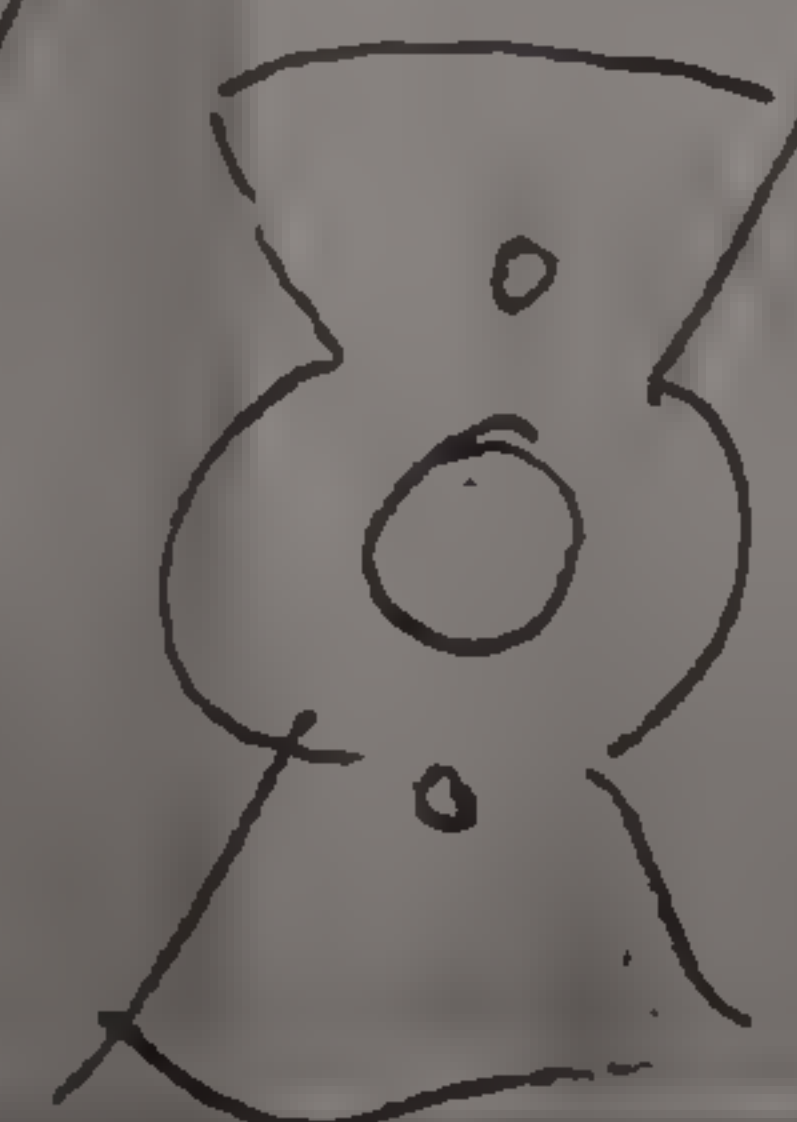
But the four pairs will
be displaced individually
exactly as before $22\frac{1}{2}^\circ$
one from the other

and in the same sense
as regards rotation. Mr.
Hartman will understand
this. To avoid mistake
I will say that the
disks of each pair were
before like this:



but now they
will be like
like disk 1.

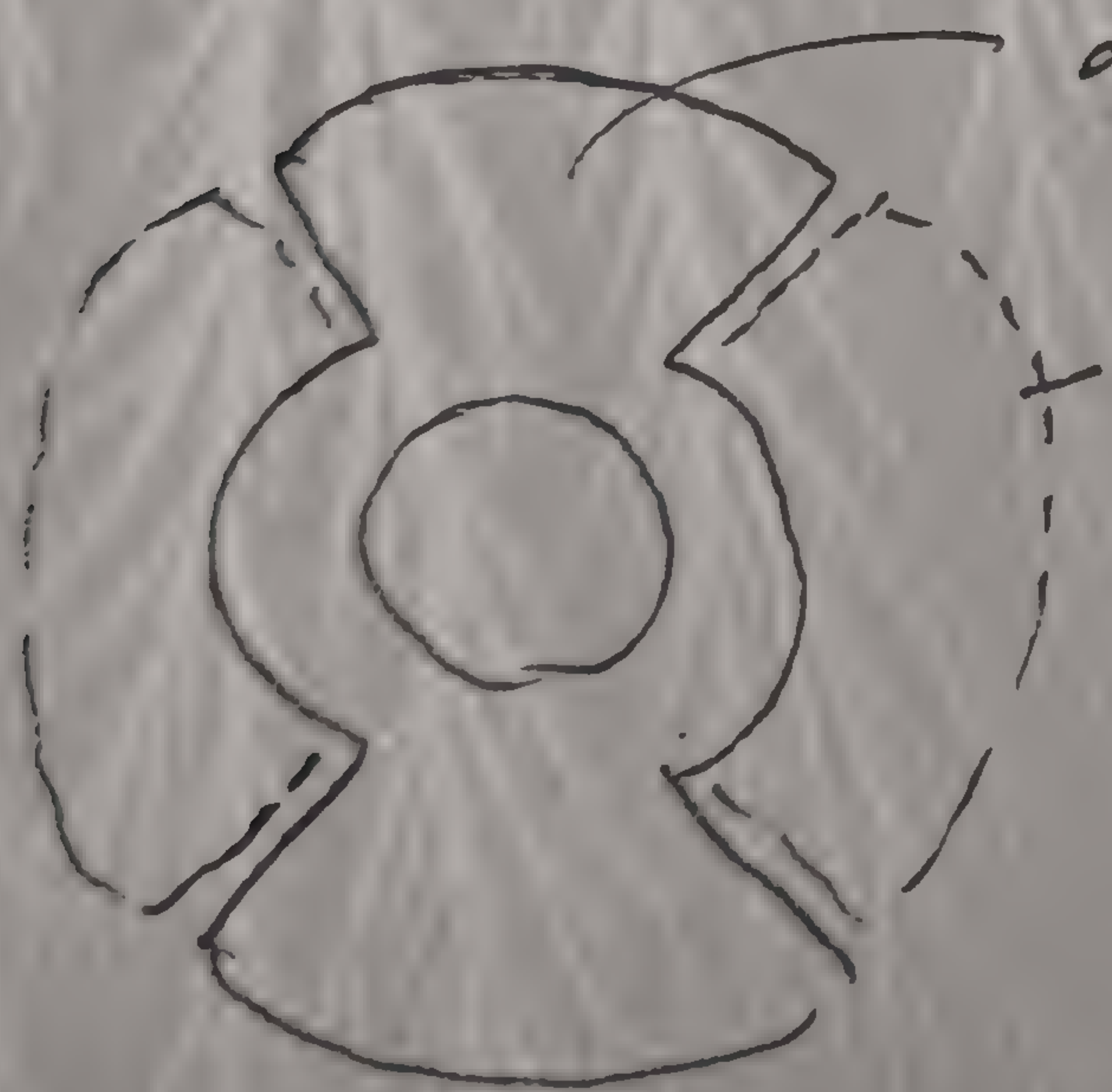
Looked from side only one
will be
visible



Please tell them that in
the new arrangement the
dots of each pair will
not be as at present
displaced by 90° but
will be placed exactly
alike (not displaced).

But the four pairs will
be displaced individually
exactly as before $22\frac{1}{2}^\circ$
one from the other.

and in the same sense
 as regards rotation. Mr.
 Hartman will understand
 this. To avoid mistake
 I will say that the
 disks of each pair were
 before like this:



disk 1

disk 2

but now they

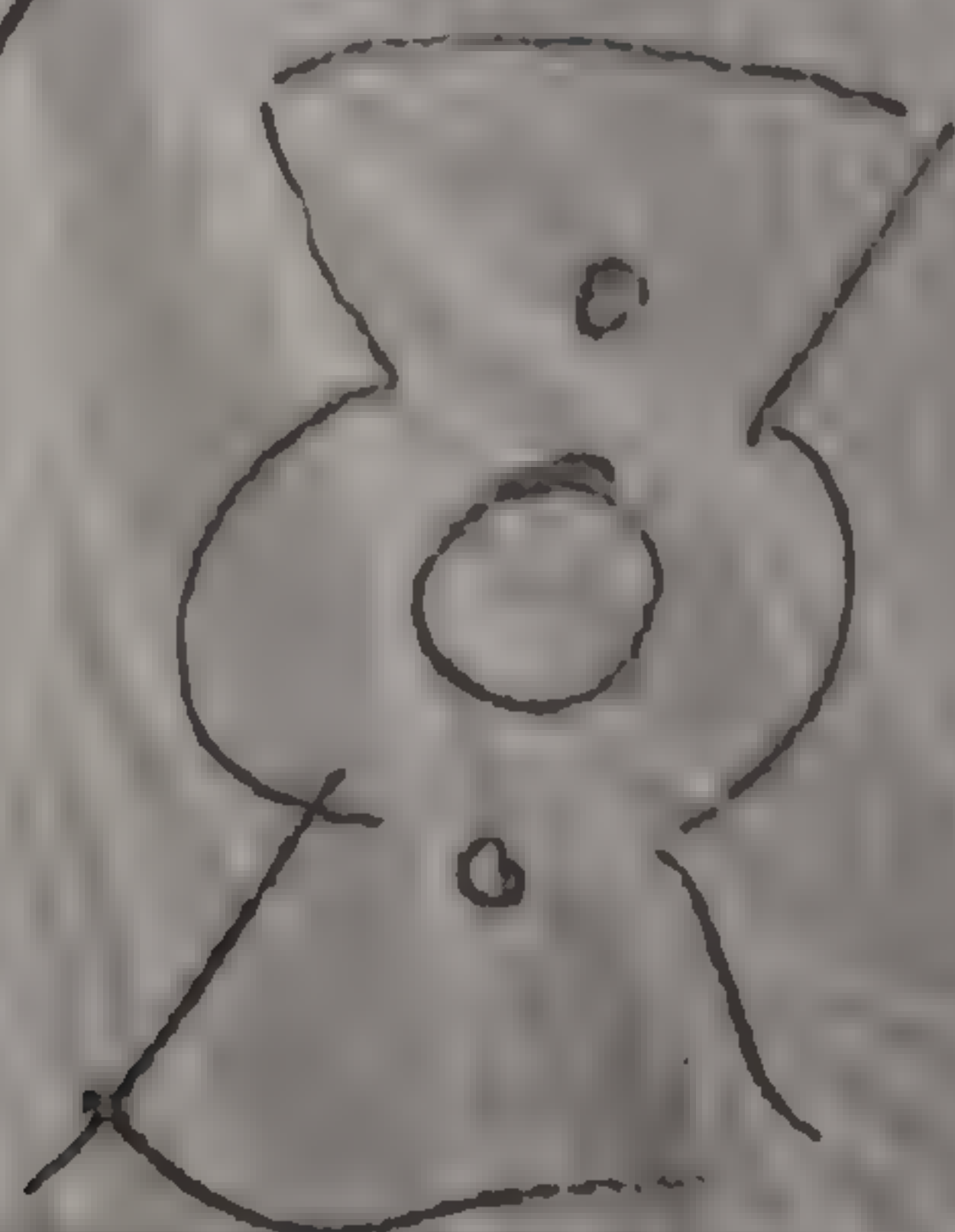
will be both

like disk 1

Looked from side only one

will be

visible



DICKSON D. ALLEY,

FORMERLY OF TUNNELL & CO.

ART PHOTOGRAPHER,

12 EAST 16TH STREET, NEAR 6TH AVENUE,

Paintings, &c., copied by the Isachromtic Process.

New York May 26 1903

Dear Mr. Alley,

Sorry I missed you. I was your for
late to escape at my place from the rail-
road station so that the doorway of the building
is just in the center of image. From a
previous photograph taken by one of my
assistants it was found that the door was
not quite square. The camera was
not quite square. The camera was
from a track. The camera was
closed to better. The camera was
should also be closed. The camera was
from, but this may not be necessary.
Please when looking at this principal view
see that the doors of the building are
all open and the door of the back room
is closed and that the two looks in
front of the room appear symmetrical with
respect to the door. Also observe that all
the windows are down and that the workmen

[illegible]

There were on a good number and
no one to follow. They were all
the same. They were all the same.

I have been thinking of you very much lately. I hope you are well and happy. I have been very busy lately, but I have managed to find some time to write to you. I have been thinking of you very much lately. I hope you are well and happy. I have been very busy lately, but I have managed to find some time to write to you.

Chair. But to the other side
This may be better.

D.D.

In addition I would like to have a
 record of the lower ... Then ...
 the ... from ... I ... the
 ... of this ... the ...
 You will ... have ...
 and in the ... as the
 laboratory ... I mean ...
 of the ... which ... the lower
 ... the ... also. You can
 go to ... place ... if you should
 find it necessary they ... please let me know

There is a ...
 as ...
 ...

Dear Mr. Scherff,

Will you please have Clark
and Hartmann and Johnson to
make a list of stock items which
we can place in the shop in
addition to those on hand.
Two of the same book should
be placed as I suggested to
H. Hartmann, he will remember
one on each side of the door.

I am writing to you
 to let you know that I
 have been thinking of you
 very much lately. I hope
 you are well and happy.
 I am well at present and
 hope to see you soon.
 I am your affectionate
 friend,
 John Doe

The ship has kept her
in the area of the
and is now very
I expect to see her

[Faint handwritten notes]

MS

July 30. 1903.

Dear Mr. Scherff,

Will you please have Clark
and Hartman to measure for
your new pair of machines and
also have them in the shop in
addition to have on hand
two of the same hot shoes
as placed as I suggested to
Mr. Hartman. We will remember
one on each side of the door.

My dear Mr. [unclear]
I have been thinking of you
very much lately and
wondering how you are
getting on.

I am well and hope
these few lines will find
you the same. I have
not much news to write
at present. Everything is
going on as usual here.
I am very much interested
in the progress of the
cause and hope to be able
to do something for it soon.

The chief thing I have
to mention is that I am
going to be married. I
am very much pleased
to report to you on this day.
Yours truly
W. T. [unclear]

This change could be made
and while there is not much
to do.

I expect to begin the making
here of millinery of course in
a number of ways that in the
last part of the year I have
completely thought out now. I
have already provided a room also in which
and the only way to do this present looking
is to keep it. I think it is a good and a clean
to have a room in the house for the millinery
additional building (and I think it is a good
I think it is a good idea and I think
to well do it. What I think

This change could be made
now while there is not much
to do.

I expect to begin the new
year of millinery of course in
a small way. This is the
first time in 10 years I have
completely bought up - over. I
must absolutely provide a room
and the only way to do this
is to hang on. I think
Mr. Brown will give me the
additional building (estimated)
I talked it over with him and
he was all right. What I think

[illegible]

NEW YORK CABLE ADDRESS, "BOLDT NEW YORK"
PHILADELPHIA CABLE ADDRESS, "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL DE LEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Car



THE ASTORIA

New York Aug. 17 1903

Dear Mr. Scheff,

Your letter of this morning has
just reached me.

You know, of course, that when
his penic came on, great many estab-
lishments simply dismissed their men.
A dozen manufacturers stopping here
have told me that they did this. These
I think, should understand that I have
tried to treat them generously in the
hardest time. This country has known
and they should be grateful indeed

of serious impurities. I have sent
one of my relatives to Europe for
money and if things go well I
shall get a sum advanced by cable
before this week is over. The
question is whether he will be able
to reach my uncle in Kishinev. In
the worst possible case he will have to
go down to Bessarabia which means a
delay of about four days. As
for the immediate and is concerned
in absolutely depending on my relatives
for also the panic is practically over
yet. The feeling of apprehension is
still acute. A number of things,
however, are developing here and
may at any moment lead to a solution
of the problem which confronts me.
I am more than ever convinced that nothing
can prevent my ultimate success. Please give
your excellent intelligence, but you can in
the interest of the cause, my friends
suffering intensely. W. F. F.

Make new plate carrying binding.
Puts in some omitting the
plug. It is not necessary.

The rubber column should be
about $1\frac{1}{2}$ " higher. Then
same column may be made by
putting a piece of rubber
bottom, long same may be
used to lighten the lightness
to the be be be.

Repair entire back mechanism.
new plate piece is necessary.
The wire for secondary coil should
be thicker and well insulated. The
coil make necessary to drill out
the rubber stems copper or make
new ones. Examined and do not
make up new one to go in.

Samuel J. T. T. T.

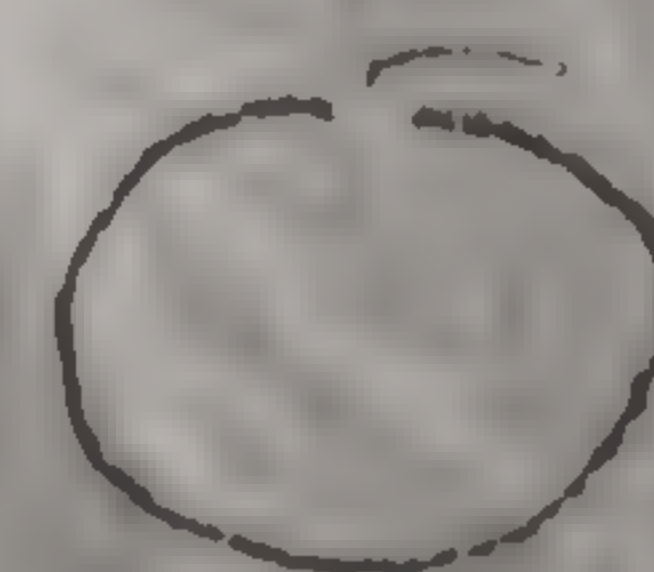
The Waldorf-Astoria
New York.

Nov. 16. 1903.

Dear Mr. Scherff,

I forward this afternoon
small oscillator to be repaired
as follows:

The februlation on which the spool
is wound should be replaced
by thin german silver sheet or,
if no german silver is on hand, by
brass sheet (tube) wall say $\frac{1}{32}$ ". Of
course the sheet bent or tube should
not be closed but open like this

 This opening $\frac{1}{16}$ " should be
burred towards the primary
copper coil on back. The

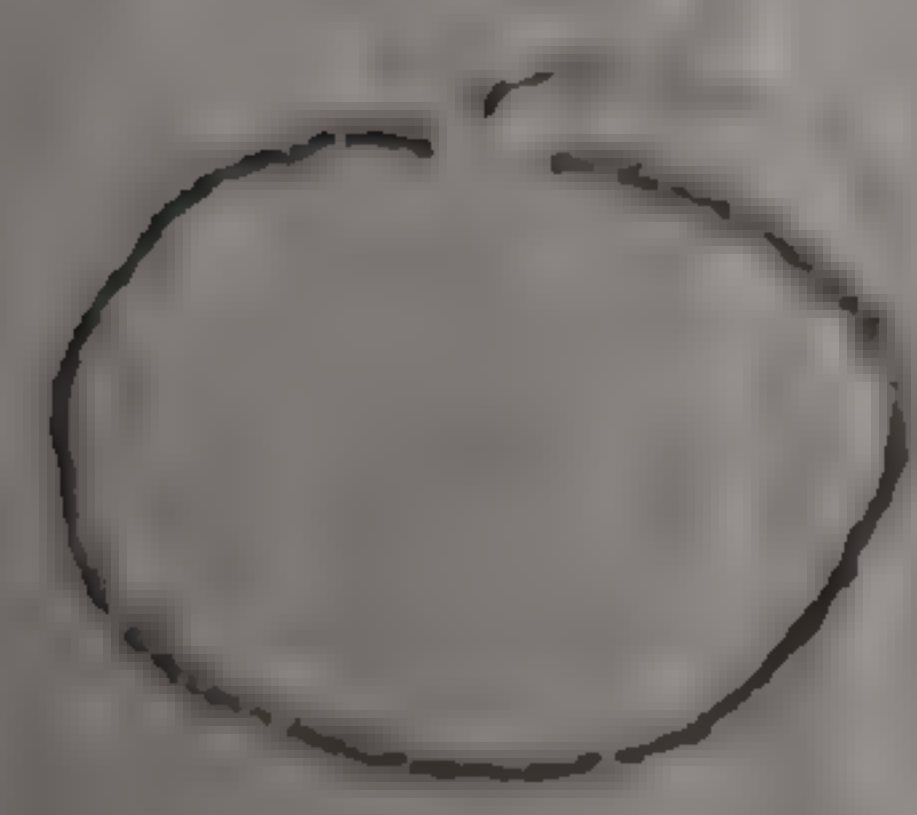
The Waldorf-Astoria
New York.

Nov. 16. 1903.

Dear Mr. Scherff,

I forward this afternoon
small oscillator to be repaired
as follows:

The fibretube on which the spool
is wound should be replaced
by thin german-silver sheet or,
if no german-silver is on hand, by
brass sheet (tube) wall say $\frac{1}{32}$ ". Of
course the sheet bent or tube should
not be closed but open like this

 This opening $\frac{1}{16}$ " should be
turned towards the primary
copper coil on back. The

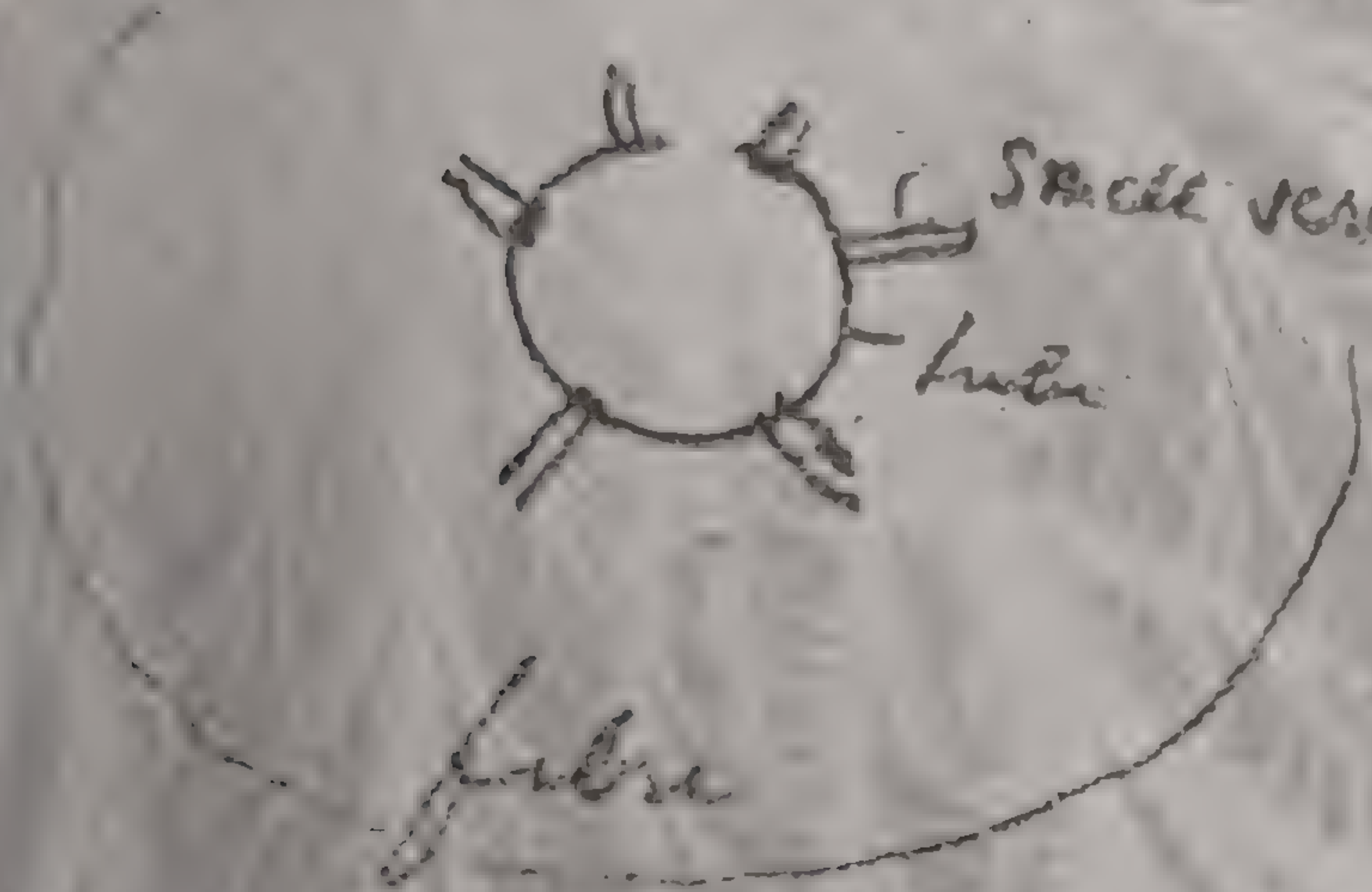
carefully (inner metal be insulated
with
mica tape
Look out in the
corners!

Of course iron core inside
should be made so much
larger so the coil is lighter
through the lengthening of the
tube carrying the fibres.

I believe the top fibre should
be changed. I saw following
the brass piece on top should
be larger those get loose

Note: Iron core inside should
be kept away from metal
surrounding it by mica fibre.
Q - fibres

metal shell or shelled tube will
be fastened by the two fibre clamps
from the inside of the tube

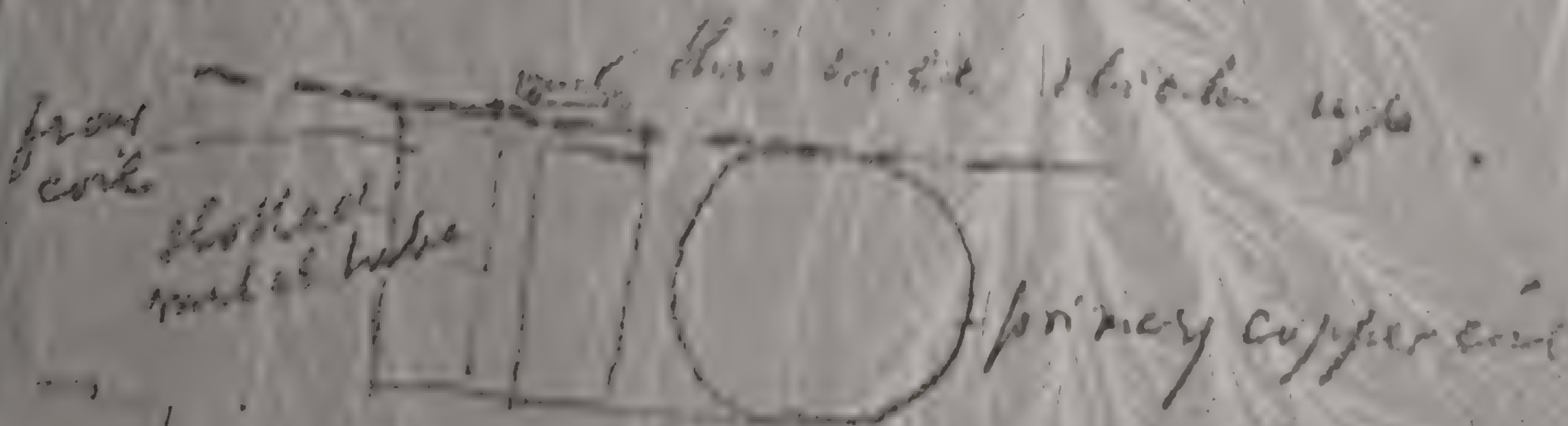


Small screws not sticking
out inside
Shell may be
1/2 inch thick

Of course
should
be larger
through
tube can

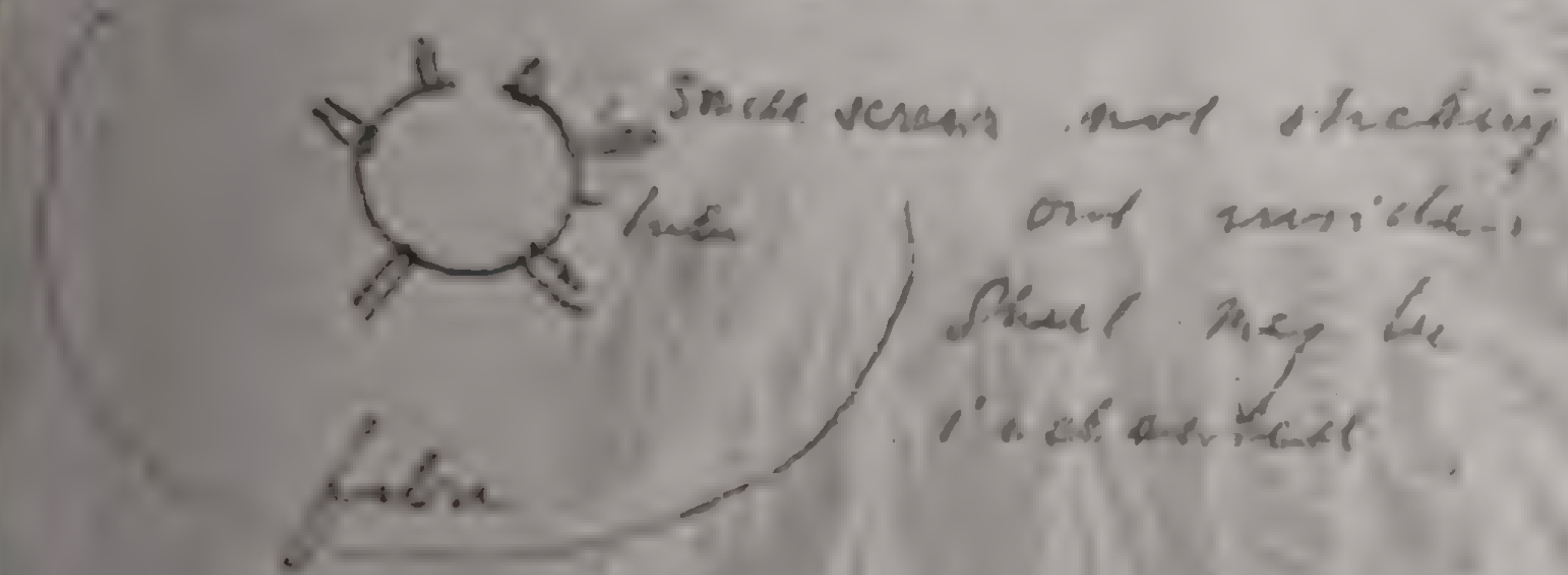
Now the metal tube should be
made larger than the fibre
to be replaced about 1/2 inch so
that the top of the front end will
be on a level with the
top of the primary copper coil
like this

I believe
be changed
the front
be larger

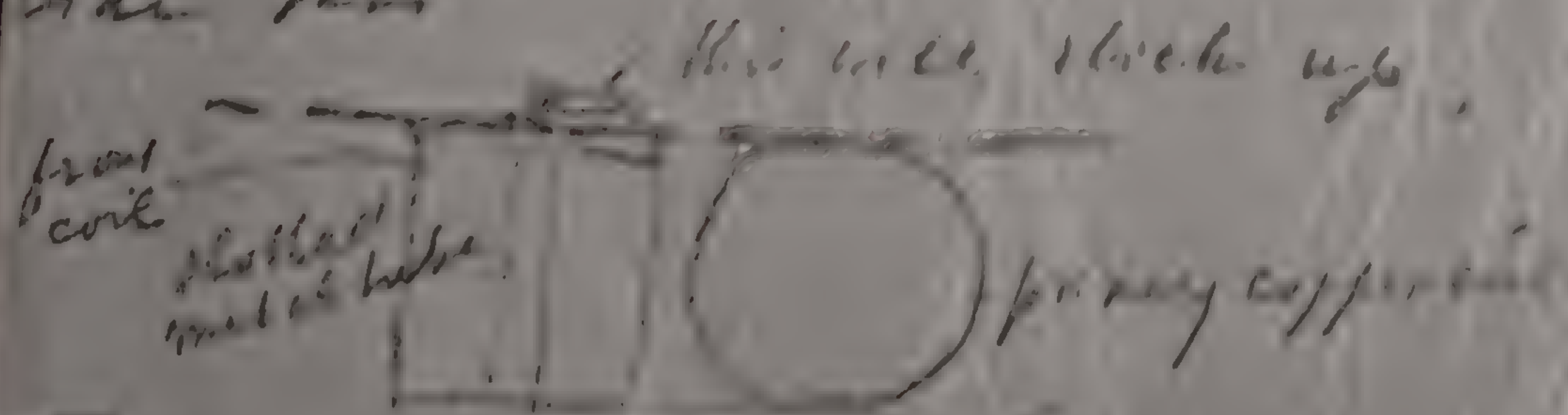


Notes: To
be kept
surrounding
the

metal shell or shelled tube will
be fastened by the two fibredoes
from the inside. ~~the~~ ^{the} then



Now the metal tube should be
made longer than the fibredoes
to be replaced about $\frac{1}{2}$ " so
that the top of the front coil will
just be on a level with the
top of the primary copper coil
like this



very dry (copper metal tube insulated
with
muslin paper
look at in the
corner!)

Of course iron core inside
should be made so much
longer as the coil is higher
through the lengthening of the
tube carrying the fibre.

I believe the top fibre should
be changed. Screws forming
the transverse on top should
be larger these like core

Note : Iron core inside should
be kept away from metal tube
surrounding it by small fibre



He has some plates covering, besides
 others in some confining the
place. It is not necessary.

The rubber column should be
about $1\frac{1}{2}$ " higher. The
same column may be made by
putting on a ^{of rubber} piece or two from
bottom, long side may be
made to lengthen it up
to the top of page.

Reps. entire back reddish
new specimens green in places

The wires from secondary coil should
be thicker and not insulated. The
coil must be wound on a core of
the rubber-steam engine or make
one. Examine and make
up the one for the.

Samuel J. May

The Walworth-Historia
New York.

Nov. 16. 1903

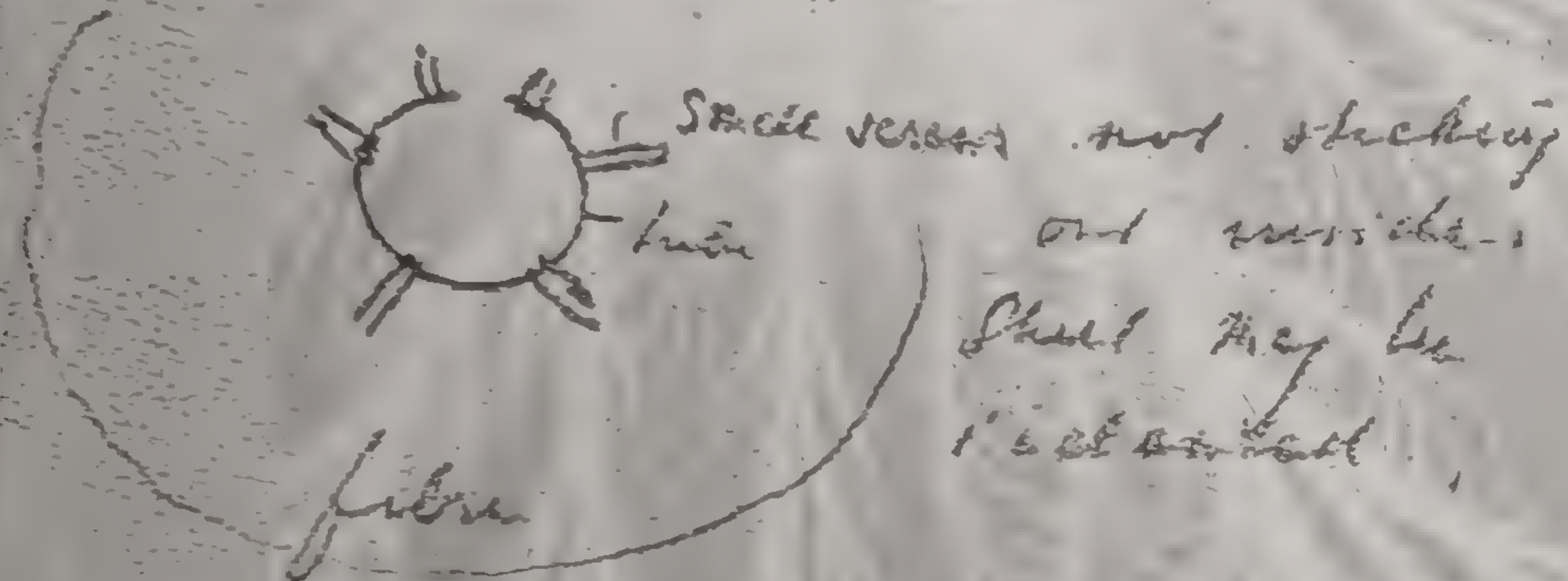
Dear Mr. Scherff,

I forwarded this afternoon
Small oscillator to be repaired
as follows:

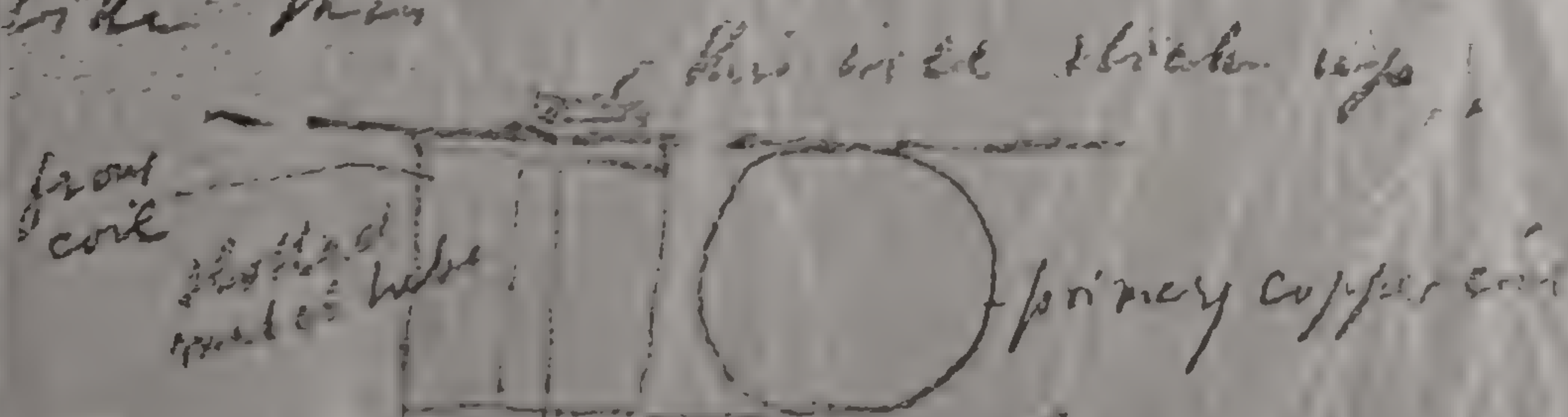
The fibretation on which the spool is wound should be replaced by thin german silver or, if no german silver is on hand, by brass sheet (tube) wall say $\frac{1}{32}$ ". Of course the shell bent or tube should not be closed but open like this

○ This opening $\frac{1}{16}$ " should be
burned towards the primary
copper and on back. The

metal shell or shelled tube will
be fastened to the two fibrous
from the inner side like this



Now the metal tube should be
made longer than the fibrous
to be replaced about $\frac{1}{2}$ " so
that the top of the front coil will
start in on a level with the
top of the primary copper coil
like this

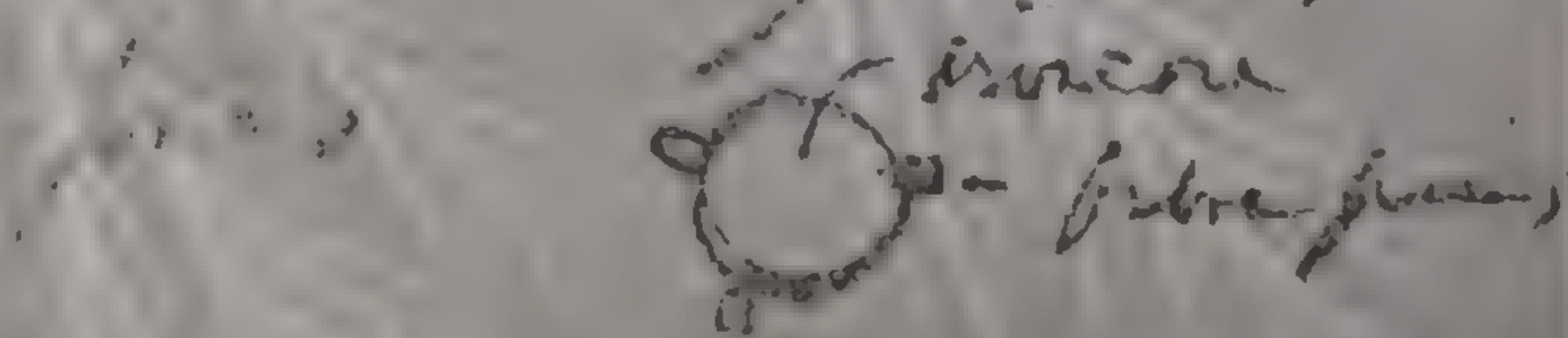


Warning (inner metal tube insulated
with
insulating paper
look at in the
corners!

Of course iron core inside
should be made so much
longer as the coil is higher
through the lengthening of the
tube carrying the fiber.

I believe the top fiber should
be changed. Iron forming
the transformer on top should
be larger than last core

Note: Iron core inside should
be kept away from metal tube
surrounding it by small fiber



are having me up
have long been made

The Waldorf-Astoria
New York.

You are right it is
perfectly wonderful
how little people are
Tidy the person. I
I expect to look them
up to morning.

Nov. 18, 1903,
Mr. Schuff,
I sent message by
telephone today to
Chapman with
one size ribbon.
Please tell Alfred to
work very carefully
many times as possible

P.S. I am writing in pencil following
words of my friend Crocker who tells that to take in energy.

should be
146
found

The Waldorf-Astoria
New York.

Apr. 18. 1903.

Dear Mr. Schuff,

I sent message by
telephone today to
have charging coil with
a one wire Richter.

Please tell Alfred to
work very carefully as
very important in primary

no paper between layers
hold that is very important.

Received 116. recorded in
copybook towards the primary
coil on back.

Apr. 18. 1903

are having me as
has long been made

You are right and it is

perfectly reasonable

that I should

try to get people to

try

the same thing

I

am sure that you

will

be able to do so

I expect to have them

you to know

please

P.S.

Don't

forget

I am writing in pencil following

many of my friends who hold that it

subject on the legs
 before the Court. The
 condition is all right.
 The subject should
 be put together as soon
 as possible. The
 all parties should
 be supported in
 previous letter.
 If not changed
 the subject should be
 removed.

make the amount
 of ~~the~~ on the ~~the~~
 a ~~the~~ ~~the~~ But it
 to provide a few ~~the~~
 which may be
 desired.
 of the
 and the
 I believe that
 the ~~the~~ ~~the~~
 will ~~the~~ ~~the~~
 I ~~the~~ ~~the~~

make the amount
 of iron on the hammer
 adjustable that is
 to provide a few thin
 sections which may be
 taken off as desired.
 There are four of the
 oscillations made the
 day. I believe the
 whole hammer works the
 whole within one
 work ~~minute~~.
 I suppose that is

This opening $\frac{1}{16}$ " should be
 directed towards the primary
 copper coil on back.



are having one or
two long talks each

The Waldorf-Astoria
New York.

You are right it is
hardly possible to
have them frequent
talks for some time
but I hope to be able
to do so soon.
I expect to look them
up to-morrow.

Apr. 18, 1903,
Dear Mr. Schuff,

I sent message by
telephone today to
have charging coil with
one size thicker.

Please tell Alfred to
check very carefully and
make any necessary adjustments.

P.S. I am writing in pencil following
orders of my friend Crookes who tells me to take no chances.

would be
116
toward the primary

except on the layer
before last. The
condenser is all right.
The mixture should
be put together as soon
as possible. The upper
is all particles
as suggested in
previous letter.

If not yet changed
the platinum electrodes
should be changed.

I suggest you

make the amount
of water on the lower
adjustable. But it
is possible a few thin
sections which may be
taken off as desired.

There are some of the
oscillations made the
day. I believe that
with these changes the
shell section will
be made satisfactorily.

I suggest that you

should be
opening 7/16
towards the primary
copper and on back.

1
Mr. Leo Scherff

Tesla Works

Wardenclyffe

L.I.

will be
primary
the

that
will

be
connected
with
the
wireless

and
have
made
the
first
step
in
the
direction
of
the
future
of
the
world
The Waldorf-Astoria

that in my conversation
with Mr. [unclear] [unclear]
[unclear] I did not [unclear]
[unclear] [unclear]

You can see that [unclear]
that the [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

which suggest that we [unclear]
[unclear] [unclear] [unclear] I do not
[unclear] [unclear] [unclear] will [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]

I would have [unclear] the [unclear]
[unclear] [unclear] [unclear] It is very [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]

The Waldorf-Astoria
New York

Dec. 9, 1903.

Mr. Scherff,

I have come to an
understanding in regard to
the [unclear] of my [unclear]
[unclear] with that [unclear]
[unclear] [unclear] [unclear]

very excellent party. He
is a large [unclear]
[unclear] [unclear] [unclear] I have
[unclear] [unclear] [unclear]

The Waldorf-Astoria
New York.

Dec. 9, 1903.

Mr. Schuyler

I have come to an

understanding in regard to

the purchase of my ma-

chine with that my

company considers an

very excellent party. It

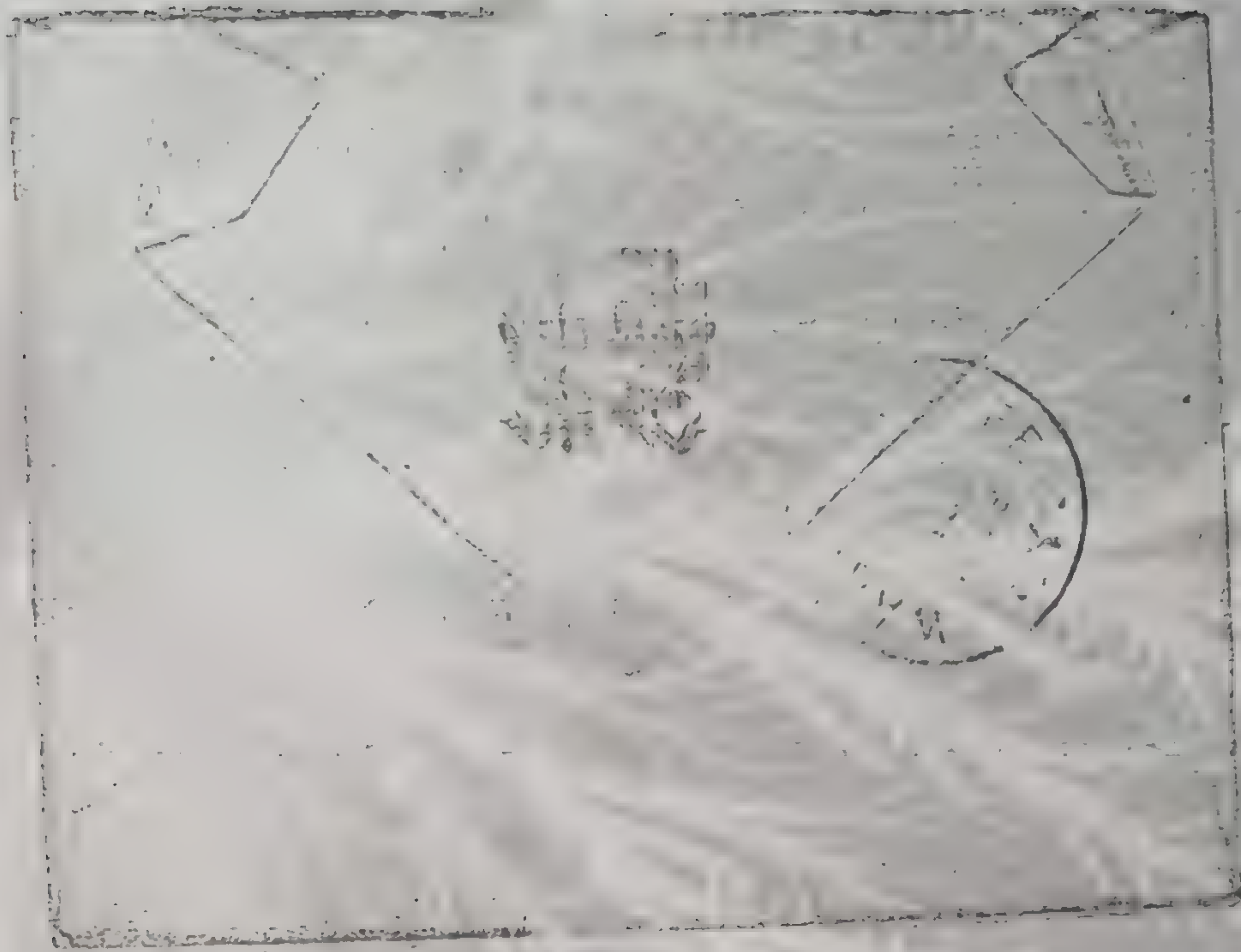
is a large manufacturing

firm in Chicago, I have

known of him before

But her ^{own} conversation
will be so ^{very} different as to
do her. I did not see her
since she has been

You can see that Dr. Brewster
thinks the present service
rendered by me is
important. The American
Ornithological Union & the
American Ornithologists
Union are on my behalf
in the purchase of a car. I
would suggest that we send
him in some way. I do not
think the others will come
but if I could have known
that they would feel that my
car was



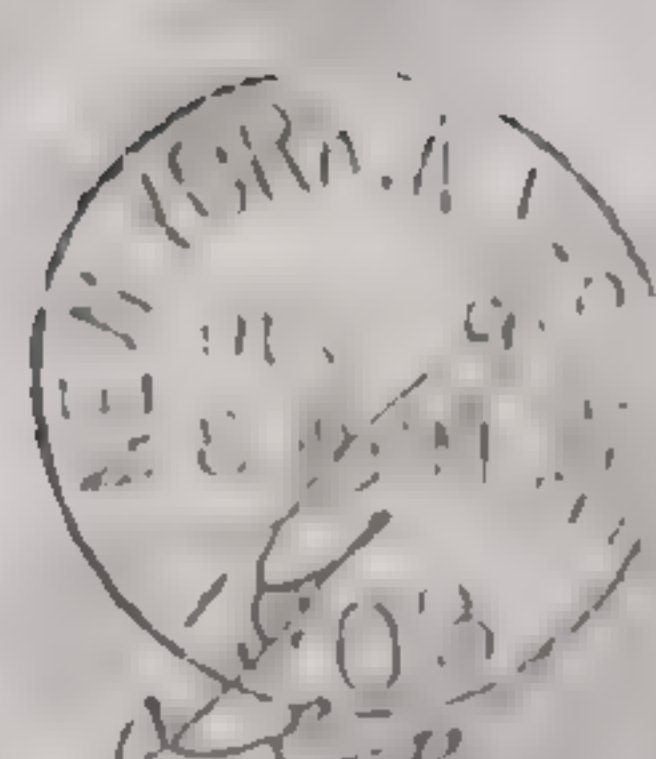
as of a man of great energy. He is to make all the trial parts and I propose to use the plan down there for all the electrical work. He you see in this way a small capital - with a few hundred pounds are in far. He is ready to take up the matter at a moment's notice. As soon as I can manage I shall be to his factory where we shall discuss some details. I am very pleased with the result but disappointed that things are not moving faster. There are certainly dreadful times. One conclusion is that the Edison - a measure - contribution - are in the same of that plan should be changed by all means as I have discovered that I have been misled. Everything

17

as of a man of great
energy. I have been by make
all the material parts as
I propose to use the plan
down there by down all
the structural work. It
you see it this way a
great capital - which reads it
far. He is ready to
take up the matter at
once. As soon as
I can manage I shall go
to his factory where he
shall discuss some details.
I am very pleased with

but the results are disappointing
and the things are not
moving faster. There
are certainly excellent
things. One conclusion
is that the Education
Department's contribution
to the work has been
much better than in
the past.

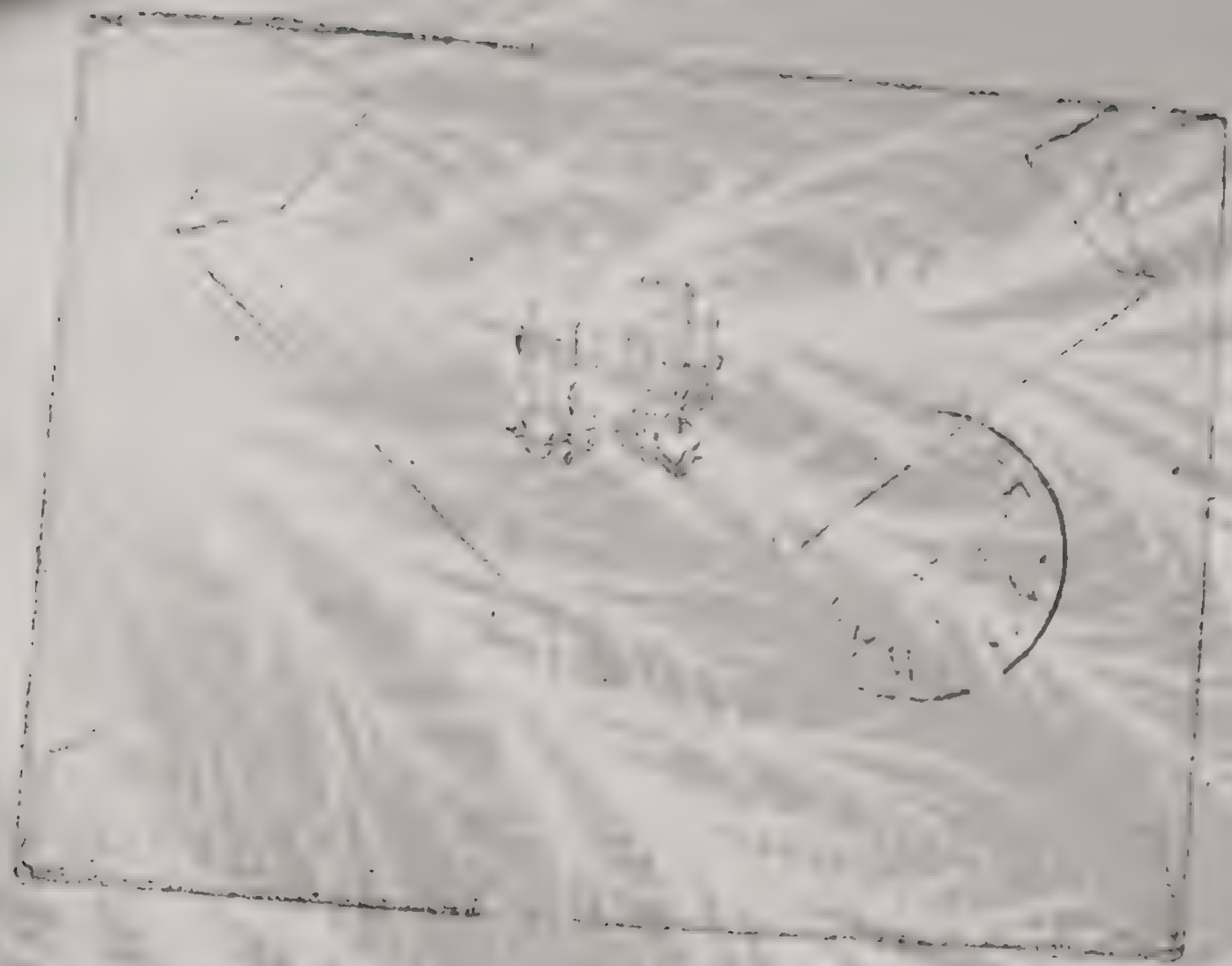
The name of the plan
should be changed to
mean as I have dis-
covered that I have been
suffering from M. Ward's
misdeeds. Everything


 Mr. Leo Scherff
 Tesla Works
 Wardencliff
 L.I.

I have been very connected
 with Wardencliff in this
 job as well. I did not see
 you for some time.
 You are in the Bronx
 (the residence) and so I
 go to see you. The manager
 is in charge of the
 place and I am
 looking for a place
 on the property as a house. I
 can never suggest that we should
 be in the same house. I do not
 think the others will have
 the same. If I could have known
 I should have felt that way.

I would have not made the
 mistake. It is very high
 The Waldorf-Astoria
 New York.
 Dec. 9, 1903.

Dear Mr. Scherff,
 I have come to an
 understanding in regard to
 the purchase of my ma-
 son with that organ
 and consider a
 very excellent party. It
 is a large manufactory
 from Christchurch, I have
 not of been before.



as of a man of great energy, who is by no means all the time at the point of view. I propose to see the plan down there by all the lines. One conclusion is that the Edison paper - the Edison contribution is far. He is really the best of the matter and a good fix. As soon as I can manage I shall come to his factory where we shall discuss some details. I am very pleased to hear of the success of the Edison paper. Everything

July 4, 1904.

Dear Mr. Schuyff,

Please have 2 ~~inches~~ ^{inches} thick

2 small pieces of ~~copied~~ ^{copied} with

hand letter as a ~~reference~~ ^{reference}. These ~~are~~ ^{are} ~~also~~ ^{also} ~~are~~ ^{are}

are only ~~approximate~~ ^{approximate}. It ~~shows~~ ^{shows} ~~some~~ ^{some}

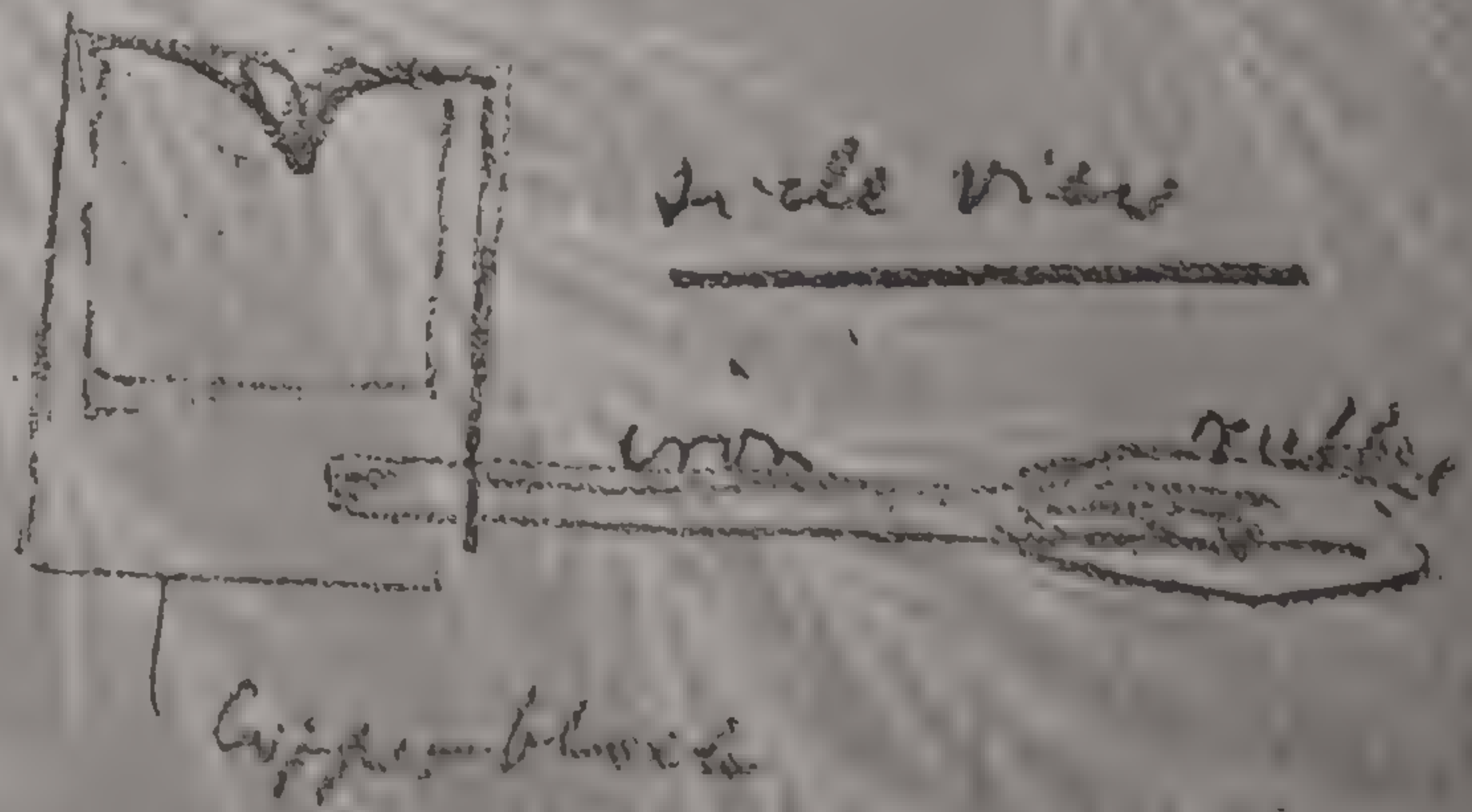
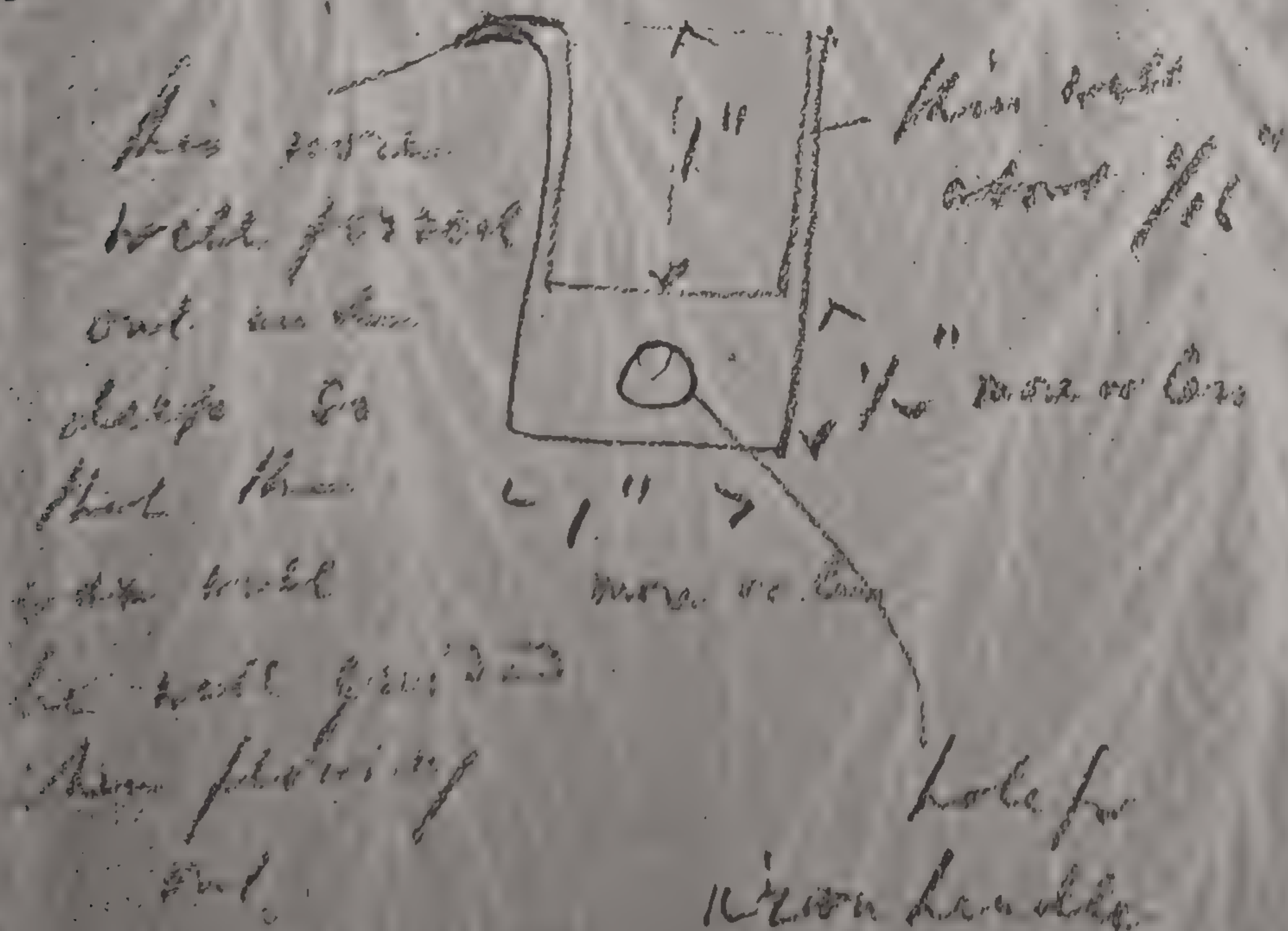
difference if they are ~~shown~~ ^{shown} ~~on~~ ^{on}

The ~~letters~~ ^{letters} ~~shown~~ ^{shown} ~~have~~ ^{have} ~~been~~ ^{been} ~~shown~~ ^{shown} ~~to~~ ^{to}

Reg. ~~board~~ ^{board} ~~long~~ ^{long}. They ~~are~~ ^{are} ~~to~~ ^{to} ~~be~~ ^{be}

used for ~~forming~~ ^{forming} ~~letters~~ ^{letters} ~~in~~ ⁱⁿ ~~the~~ ^{the}

forming the ~~letters~~ ^{letters}



2 of these

over

Perhaps I will ~~be~~ ~~have~~ ~~seen~~
found them ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~
away ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~

Tuesday

I hope you ~~are~~ ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~
I hope you ~~are~~ ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~
I hope you ~~are~~ ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~

~~I hope~~

~~I hope~~

~~I hope~~

P.S.

My letter ~~is~~ ~~in~~ ~~the~~ ~~city~~ ~~on~~ ~~Monday~~ ~~evening~~
on ~~Friday~~ ~~forenoon~~

Perhaps And I have been
from the 1st Monday evening
away to the 1st of the
Tuesday

I hope you are doing the
shops and the people are
considering the things

for the

Love

A. T. W.

P.S.

My letter can be sent out
on Friday forenoon

The Waldorf-Astoria
Fifth Avenue 33^d and 34th Street
and Astor Court,
New York.

M. Leo

Perle Works

Waldenlyffe

a payment not to be
perfectly perfect and you

know that after that
I can draw on the
U. S. Treasury

I am not at all
satisfied with the
result of the
operation

Trise to see
you on Friday the
whole day in vain. *Yours Truly*

New York City
June 11, 1904

My dear Mr. Scherff,

This freight is out-
rageous. I believe the
S. R. R. is holding
but a band of out-
throats. There is
no report of it except

to pay
plain at 20 cents

New York City
B June 11, 1904

My dear Mr. Scherff,

This freight is out -
papers. I believe the
- N. Y. R. R. is making
out a bill of out -
boats. The there is
no way or of it except
to pay.

Yours truly
John Lawrence

as for the rest of the
 purpose of the paper and you
 know that after this
 I can draw on the
 N. S. Trusting
 I shall be able to do so
 with the paper
 and the money
 and the paper
 and the money
 and the paper

Tried to get
 you on the 11th
 when day is over. V. Teale

Aug
 The
 20/10
 not
 the
 to
 to
 the

complete this job as I am afraid Robinson
from as possible. Also to cut down the grass
see that all the after-eyeglasses within fence.
before entering to the It will be a good better.
large garden and as a I produce an excellent
order. I shall be left with some small
at which I come and the other evening, I am
head them. I hope will really be finished. Had
to the day after to - it changed to improve will
more. For to-morrow but the success was not
I have a number of guide as expected. I am
let out, to create. And now for the time

MS

Aug. 7. 1904.

Dear Mr. Scherff,

I had a dreadful
experience in the college
last night and lost
myself in the night.

Mrs. Scherff wrote very
much oblige me if
she could kindly send
me some coffee
and perhaps some eggs.
Very sorry to trouble you
Sincerely
J. T. T. T.

MS

Aug. 7. 1904.

Dear Mr. Scherff,

I had a successful
experience in the college
last day and had
a good time.

Mr. Scherff would very
much oblige me if
he would kindly send
me some coffee
and perhaps his eggs.
Very sorry to trouble you
Sincerely
J. T. T. T.

The Walcott-Victoria
New York.

Jan. 23, 1905.

My dear Mr. Scherff,

Your letter, from
sufficiently to permit
any individual person
to use the terrible
word "scare" of
brandenburg - used
in the letter -

Get the things of
to-day. When the
the foundation your
name are hope the
ports are in an
R. & P.M. train
I am working here
on the same days
relating the support
of laying a solid
foundation before
I build further.
P.S. Please

Brace up the W. Ch.
K. & Co. rather say
the following. The
the obstacles in my
way are a regular
Hydra. Just as soon
as I chop off a
lead two new ones
grow. By afternoon
I am expect-
ing some results
Dinner at 7
at 7:30

The Waldorf-Astoria
New York.

Jan. 23. 1905.

My dear Mr. Scherff,

Your letter from

sufficiently explained

my intention to have

to make the terrible

open road of

to identify the - need

to be taken

Get the things off
to-day. I'll see the
two gentlemen you
mean are hope the
goods will be on
the 4 P.M. train.
I am working hard
on the new engine
receiving the engine.
of laying a solid
foundation before
I build further.

P.S. Please let me

The
 you
 the
 are
 in.
 her
 up
 old.
 and
 from
 been
 as we have arrived at Ten

Dr. H. Ph.
 K. & Co. Miller May 1900
 L. S. C. Loring. The
 the obstacles, a big
 they are a regular
 Hydra. Just as soon
 as I chop off a
 lead how new ones
 grow. They often
 become so large
 by some results
 Duncanson
 as we have arrived at Ten

people to know of
I am ready.

The work is progressing fast.
Things will be ready this week
~~and~~ probably the next will
see us further along. I am
doing all I can as you may
imagine. It is going to

be a fine machine. There
do you best in the meantime to
put all difficulties which
may present themselves

Sincerely et Teils

P.S. There is a possibility that I may
not be here for a day or two. Will
write a day before if necessary.

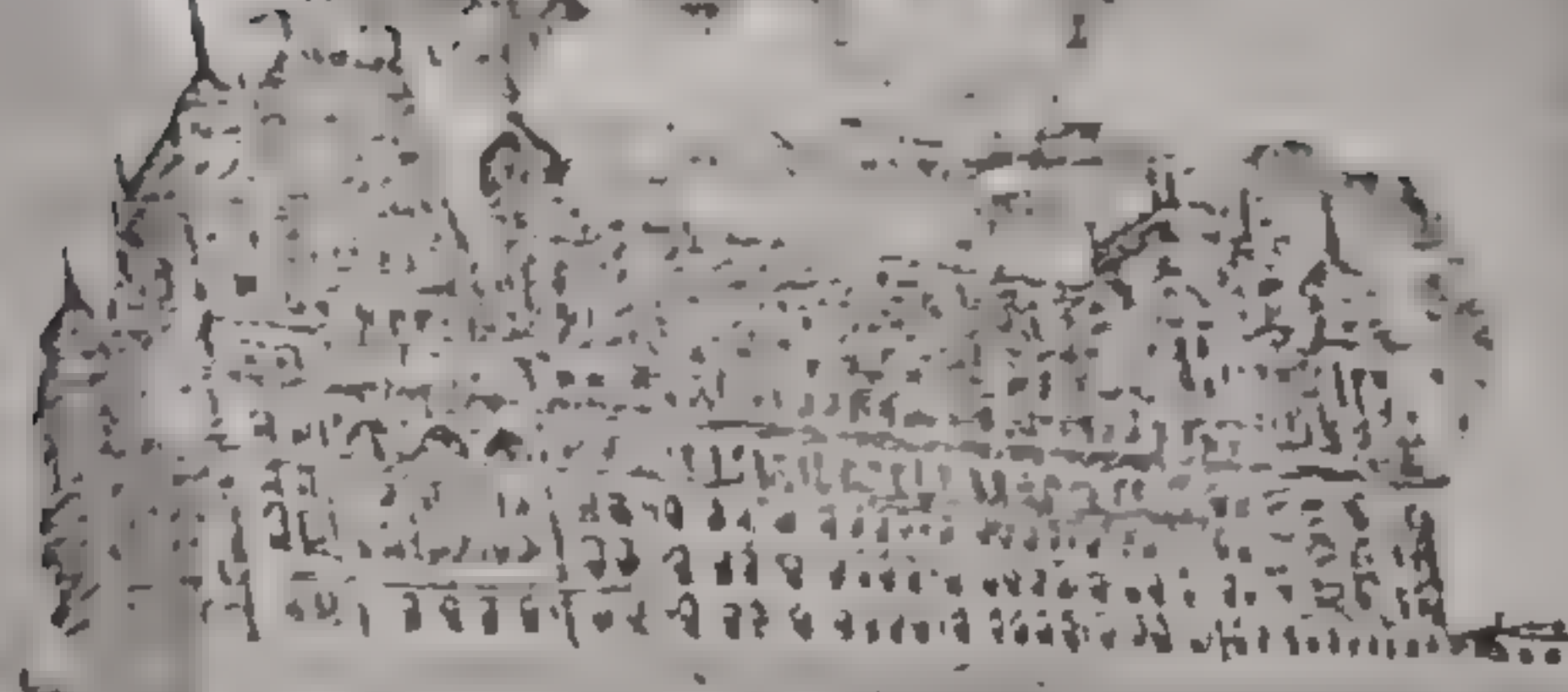
New York City

March 20, 1900.

Dear Mr. Scherff,

I have just received
your letter referring to
the carbon of a
at Dordrecht.

It does not seem fair
to make me or the Coal-
dealers responsible for the
damage. As you know I



offered to the L. J. R. R. Co
to take this coal if they
would only give me a
little time for payment.
In view of their early
promises I was dumb-
founded to learn that they
were not doing so.
It is just as that. Just
as soon as they refused
they ought to have shipped
the coal away to avoid
injury to other people.

If they have not done
it, it is a very serious
mistake. I am alto-
gether too unfortun-
ate to have so many troubles to
contend with that I
am unable to suggest
anything. It would be
wiser however to make
any suggestion. Even if
they would let me have
this coal it would be
too dear for me.
I shall see the other

New York City

B March 20, 1901-

Dear Mr. Scherff,

I have just received
your letter referring to
the contract of ex-
change of the

It does not seem fair
to make me or the Col-
leagues responsible for the
damage. As you know I

people to-morrow
I can manage.

The work is progressing fairly.
Things will be ready this week
and probably the next will
see us further along. I can
do any old I can as you may
require. It is going

be a fine machine. Please
do your best in the meantime to
meet all difficulties which
may present themselves

Sincerely et Telle

P.S. There is a possibility that I may
not be here for a day or two. Will
arrive a day before if necessary.

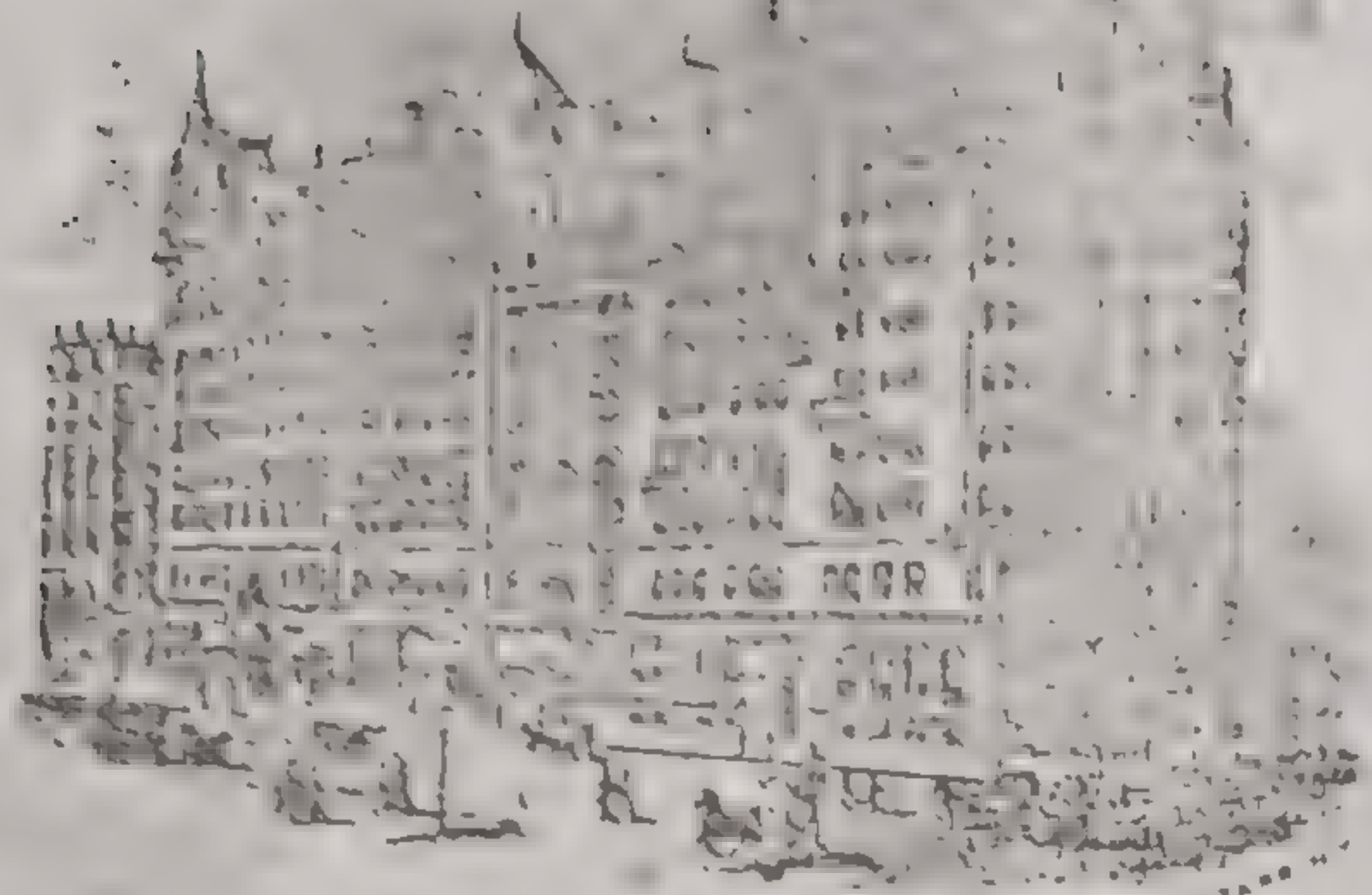
offered to the L. J. R. R. C.
to take this coal if they
would only give me a
little time for payment.
In view of their early
promises I was dumb-
founded to learn that they
were not as good as they
seemed. Just
as soon as they refused
they ought to have shipped
the coal away to avoid
injury to other people.

123456789

26

I have not done
it is a singular crim-
inal neglect. I am altho-
gether too unfortunate and
have so many troubles
~~concerned~~ with them
am unable to suggest
anything. It would be
wiser however to make
my suggestion. Even if
they would tell me how
this carbon it would be
be dear for me.
I shall see the other

NEW YORK CABLE ADDRESS: JNE, NEW YORK
PHILADELPHIA CABLE ADDRESS: JNE, PHILADELPHIA



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York March 22 1904

Dear Mr. Scherff,

I have just received a letter from
Charles Scherff, who has been
very kind to write to me
and I am very glad to hear
from him. He has been very
kind to write to me and I am
very glad to hear from him.
He has been very kind to write
to me and I am very glad to
hear from him. He has been
very kind to write to me and
I am very glad to hear from
him. He has been very kind to
write to me and I am very glad
to hear from him. He has been
very kind to write to me and I
am very glad to hear from him.

My dear Mr. [unclear],

I am alone here now but it is
like lifting a weight from my mind
now.

The work on the [unclear] machine

is progressing well. It seems the

applicable paper is not yet
ready for a [unclear] [unclear] [unclear]

[unclear]

I am always [unclear] [unclear] [unclear]

[unclear] [unclear] [unclear] [unclear]

Please write me, I am

[unclear]

[unclear]

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BOLLETT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York March 24 1901

Dear Mr. Schuyt,

Your letter with the same received.
I do not think it is possible to see
the article in the right. This
shall be your fault.

The comment in the Ed. paper is very good but
I have a better one in German. Evidently
a change for the better in taking place. The
question now is only to get near the same
proving difficulties.

Have followed your suggestion and have ordered
a cartoon from Penn. Bros. but of course
I did not see any way of asking them to
pay freight. I have signed an article
but had them say other things and they can
ship it and send it.

Could you see that he study
on the last page for the new
method, also the paper. The stamp is
that in which I have the content
type at 2 1/2. The content some
time ago. The new paper will be
to give the method. The paper will
as we have been a number of days.
The new paper will be the last
change in the paper. The new
of the paper will be the new paper
which I have been for some time to
see if some of the paper on the
stamping machine and we have only
a little time.

Begin to the other to get out and
need to be in. Sunday

2 The

NEW YORK CABLE ADDRESS: "WALDORF," NEW YORK.
PHILADELPHIA CABLE ADDRESS: "WALDORF," PHILADELPHIA.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
GULLITT BUILDING RESTAURANT, PHILADELPHIA.

GEO. G. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Court,



THE ASTORIA

New York March 28 1905

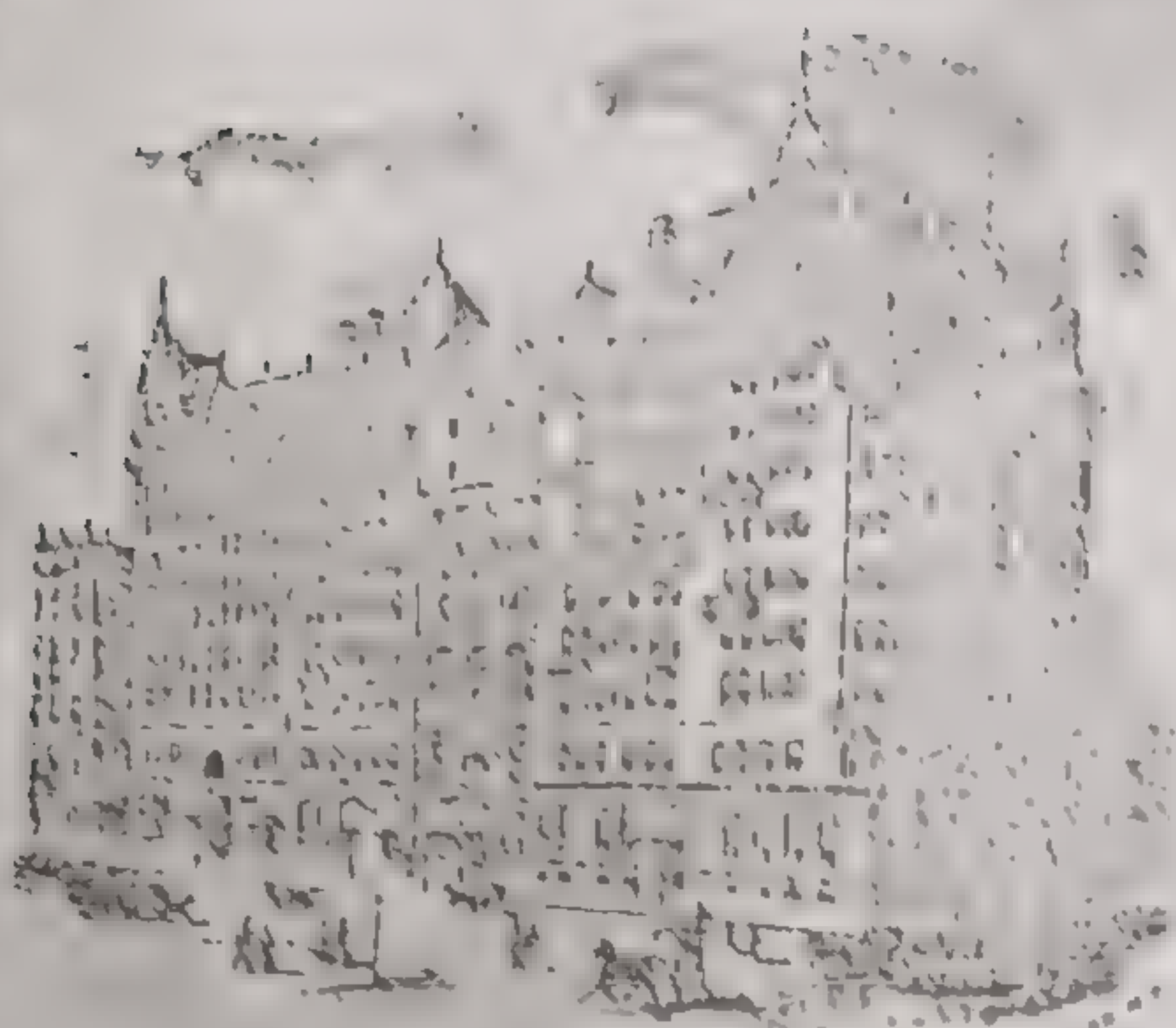
Dear Mr. Scherff,

Firm of all - Saxe's Thunder struck the
Waldorf early this morning. It came
out of a clear sky. Technically, of
course, you know Saxe is wrong. He
ought to have his lenses and then
these should see me for creers. But
it is just that he has on this
occasion unfurled his true colors.
I intend to tell him that if my people
should abandon his house the property
would be worthless for no one else
could be found. This looks like a
good argument or rather club.

I call attention I would like to
have this one out of the way and
I am thinking of securing some sort
of proposition. Should you get some
good ideas please write me.

Although I have not yet seen draw-
ings - but certainly having been found bed -
I expect the machine to be ready
and in operation next week. Clerk should
inspect the Exhaust as understood last
Sunday. He can buy his steam and
then a 2 1/2 pressure connection above the flow,
and put them put the plates in place.
By the way all the machine work
and rest of things as readily as possible. Have
all the men you can get at this. Power
might be used to improve things outside.
You will get the coal very soon. I had a
conversation with the people over the phone.
Your letter was ok. except the understanding
but - der Sweet Licht des Mittel! "I"
Some particulars for printing will follow later - will
reach you probably with some more.
Do not forget translation of Pet. Specifics, Smiles & Tsch

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

CEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 31st and 34th Streets
and Motor Court,



THE ASTORIA

New York March 29 1905

Dear Mr. Scherff

I enclose right to be perfectly
satisfied for about 1/2 of the
paper should have been valued and more
from the blue at this rate the
check of the stamp for 5 (2nd class)
downwards and that the congruent air
for a space for insurance of handling
Please have dark exchange at the
to the 10th that I my and my
try is on the same as possible

NEW YORK
MAR 29
2-30P
1905
N.Y.



Mr. George Scherff

Woodencliff

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Court,



THE ASTORIA

New York March 29 1905

Dear Mr. Scherff

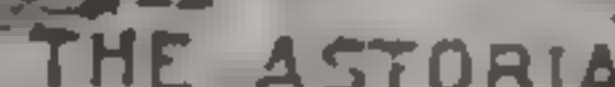
Enclosed ought to be perfectly
sufficient for the job up
to the level of the connection. All
pipes should have been valves and union
joints in line. The whole thing
should be done in the 5 (2nd level)
down and the compressed air
for the system for the use of the
place has been done. I am
very sure that I am sure
that it is all in a perfect

NEW YORK, N.Y.



GEO. C. BOLDT Press

Historia,



THE ASTORIA

New York *March 27* 1901

4

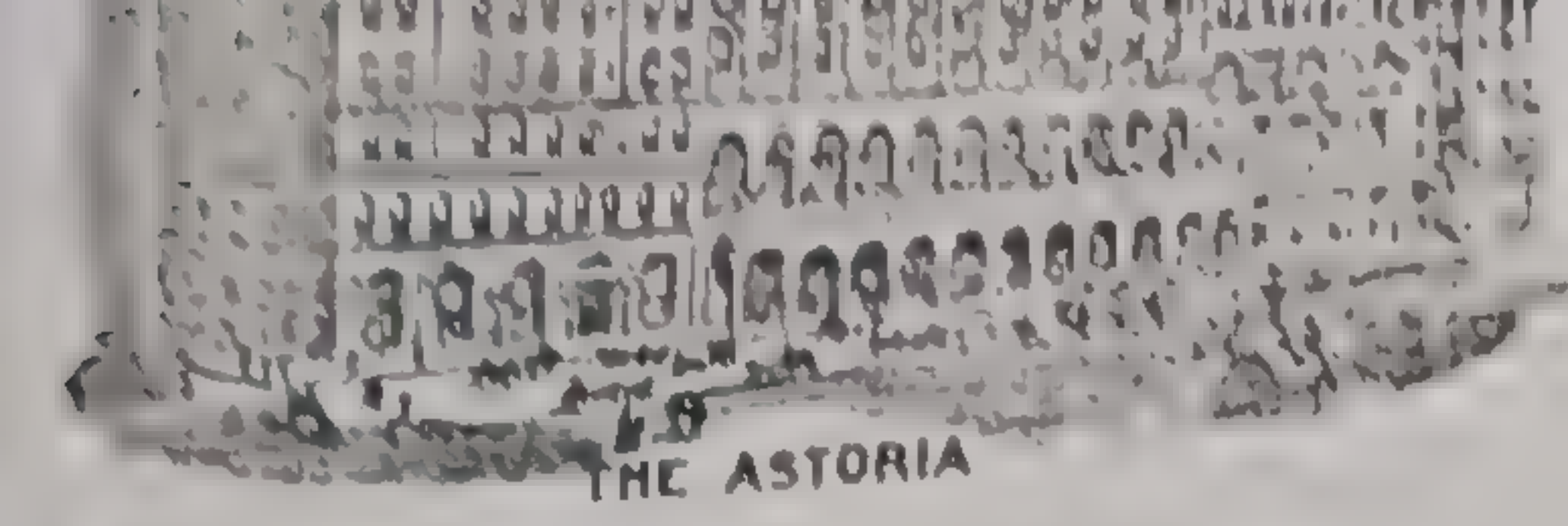
GED. C. BOLDY. PRO.

Handwritten signature: *Handwritten signature, possibly "Handwritten signature"*

I am glad to hear from you. I have been
 thinking of you a great deal lately. I hope you are
 well and happy. I am well at present. I have been
 very busy lately, but I have managed to find some
 time to write to you. I hope you will find this
 letter interesting. I have been thinking of you a great
 deal lately. I hope you are well and happy. I am well
 at present. I have been very busy lately, but I have
 managed to find some time to write to you. I hope you
 will find this letter interesting. I have been thinking of
 you a great deal lately. I hope you are well and happy.

1. *Handwritten text, likely bleed-through from the reverse side of the page.*

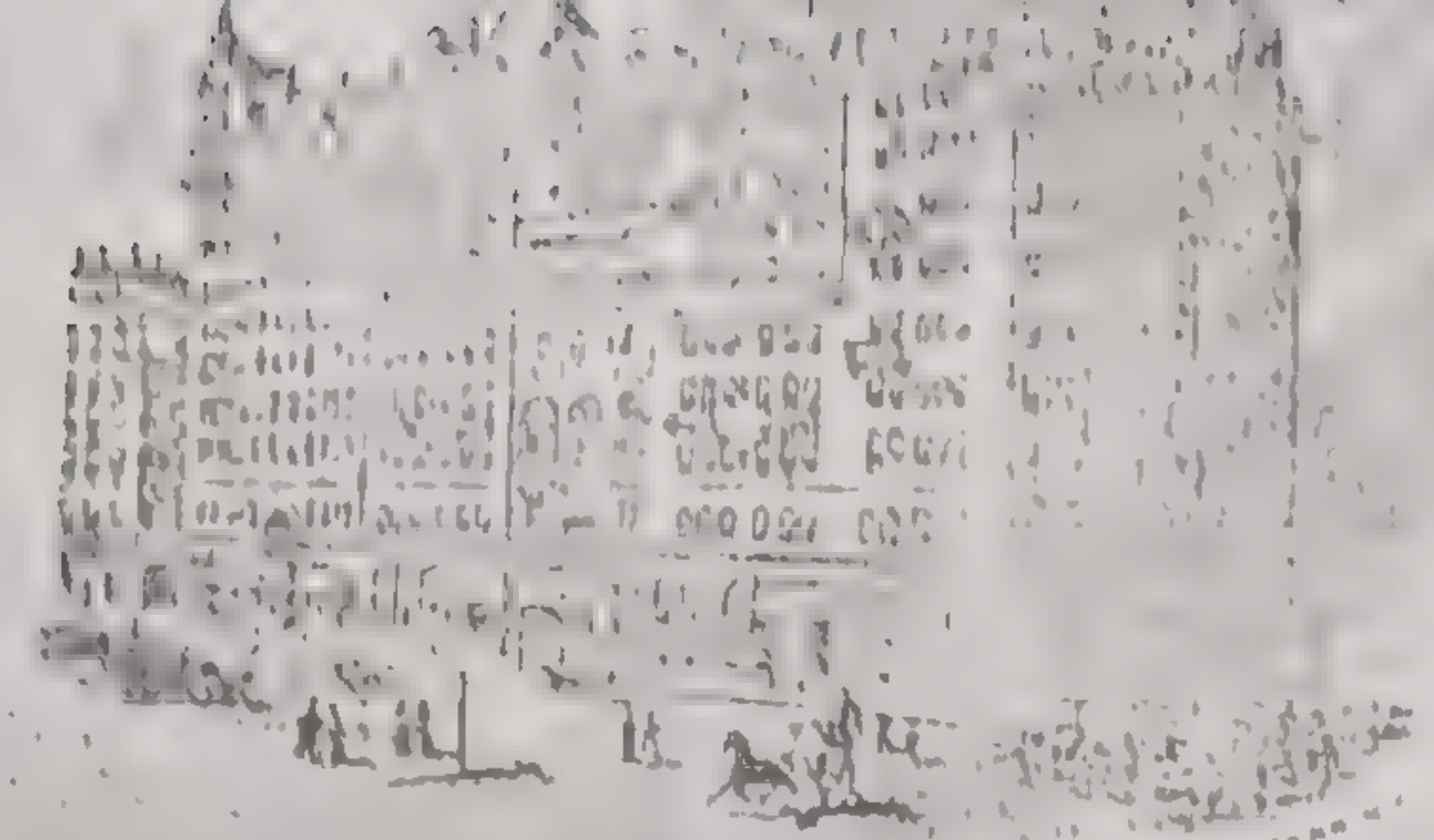
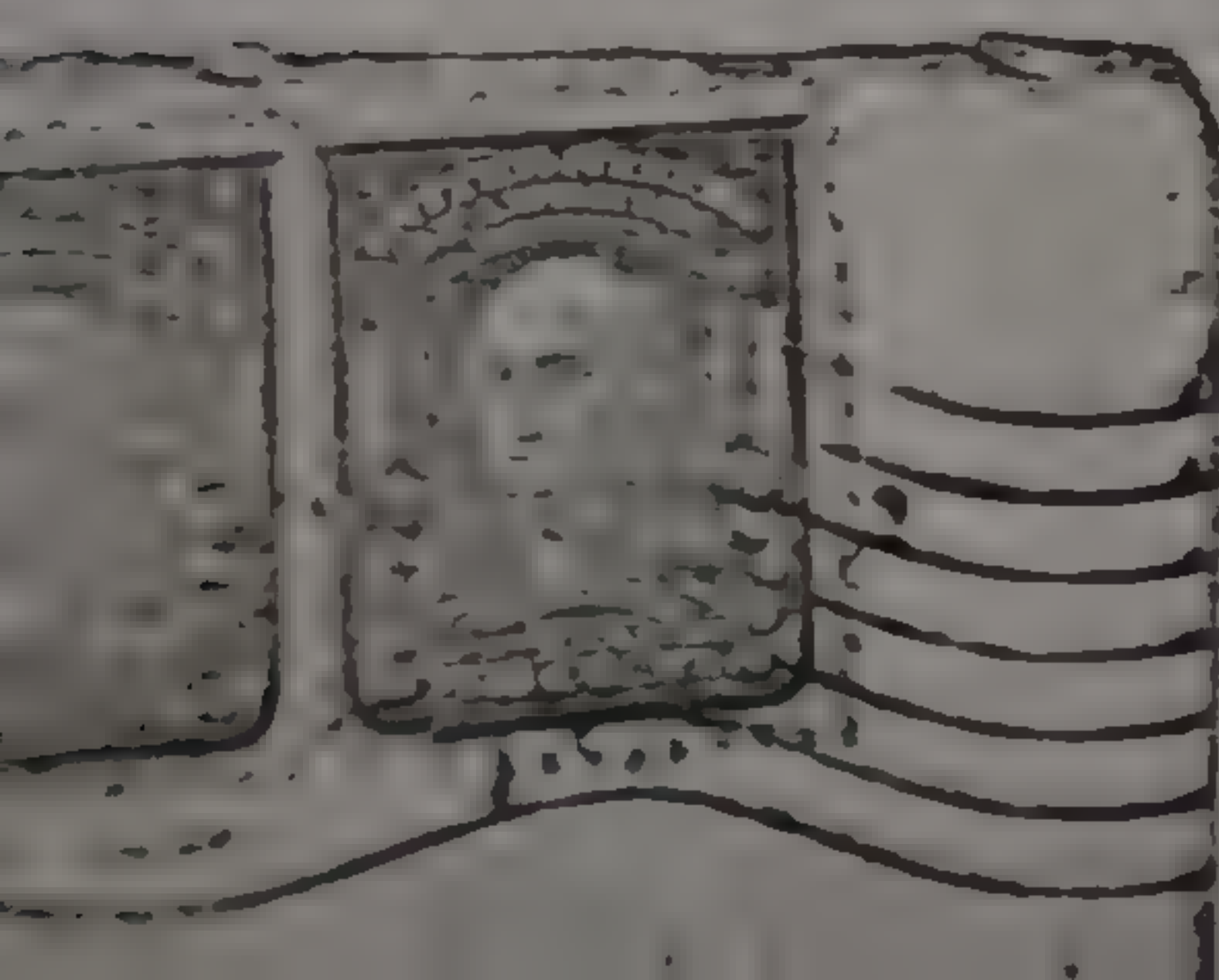
[illegible]



THE ASTORIA

March 29 1905

perfectly
put up
All
arrived
The
(stuck) turned
engaged for
one of leading
and
people



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
MULLITT BUILDING RESTAURANT,
PHILADELPHIA
GEO. C. BOLD, PROP.

The Waldorf Astoria,
Fifth Avenue, 33rd and 40th Streets
and Motor Cars



THE ASTORIA

New York March 29 1905

Dear Mr. Schuyler,

I am writing you a letter from
New York 11:30 P.M. You will
be interested to know that I have placed over
the whole of the hotel a large sign that
says "Hotel Waldorf-Astoria". I am
very glad to hear that you are
going to be called to the important
of the moment. I am best
I will sketch for you a short
note to be written and for your own

[Faint, illegible handwritten text, possibly bleed-through from the reverse side of the page. The text is arranged in several lines across the page.]

NEW YORK CABLE ADDRESS
PHILADELPHIA CABLE ADDRESS



THE WALDORF
THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA
CFO. BUILD. PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court



THE ASTORIA

New York March 30, 1905

Dear Mr. Scherff,

Enclosed please find of D. M. T. Co.
at this date, I enclose it that I
am enclosing my check and one bill for
the same.

Please keep the same for 20-
days of duration in my possession. The
check will not be cashed till all
things are done. I am sure the same
will be O.K. as far as the
payment is concerned. I feel sure.
This money will be used for
the work of the laboratory.
I want to go to the same soon.

NEW YORK, N.Y. STATE
MAR 30
3 33 PM
1905



Mr. George Scherff
Wardencliff

I have been thinking of you
 very much lately and wondering
 how you are getting on. I hope
 you are well and happy. I have
 been very busy lately but I
 have managed to find some time
 to write you. I have been
 thinking of you very much lately
 and wondering how you are
 getting on. I hope you are
 well and happy. I have been
 very busy lately but I have
 managed to find some time to
 write you. I have been thinking
 of you very much lately and
 wondering how you are getting
 on. I hope you are well and
 happy. I have been very busy
 lately but I have managed to
 find some time to write you.

—

[Faint, illegible handwriting]

[Faint handwritten text, likely bleed-through from the reverse side of the page.]

1990

172

I have been thinking of you
 and how much I have enjoyed
 your company. I hope you
 are well and happy. I am
 still the same old me.

24 1905
 from
 over
 fac
 and
 reference
 from
 which
 in man



The Waldorf-Astoria,
 Fifth Avenue, 31st and 32nd Streets
 and Hotel 6-11

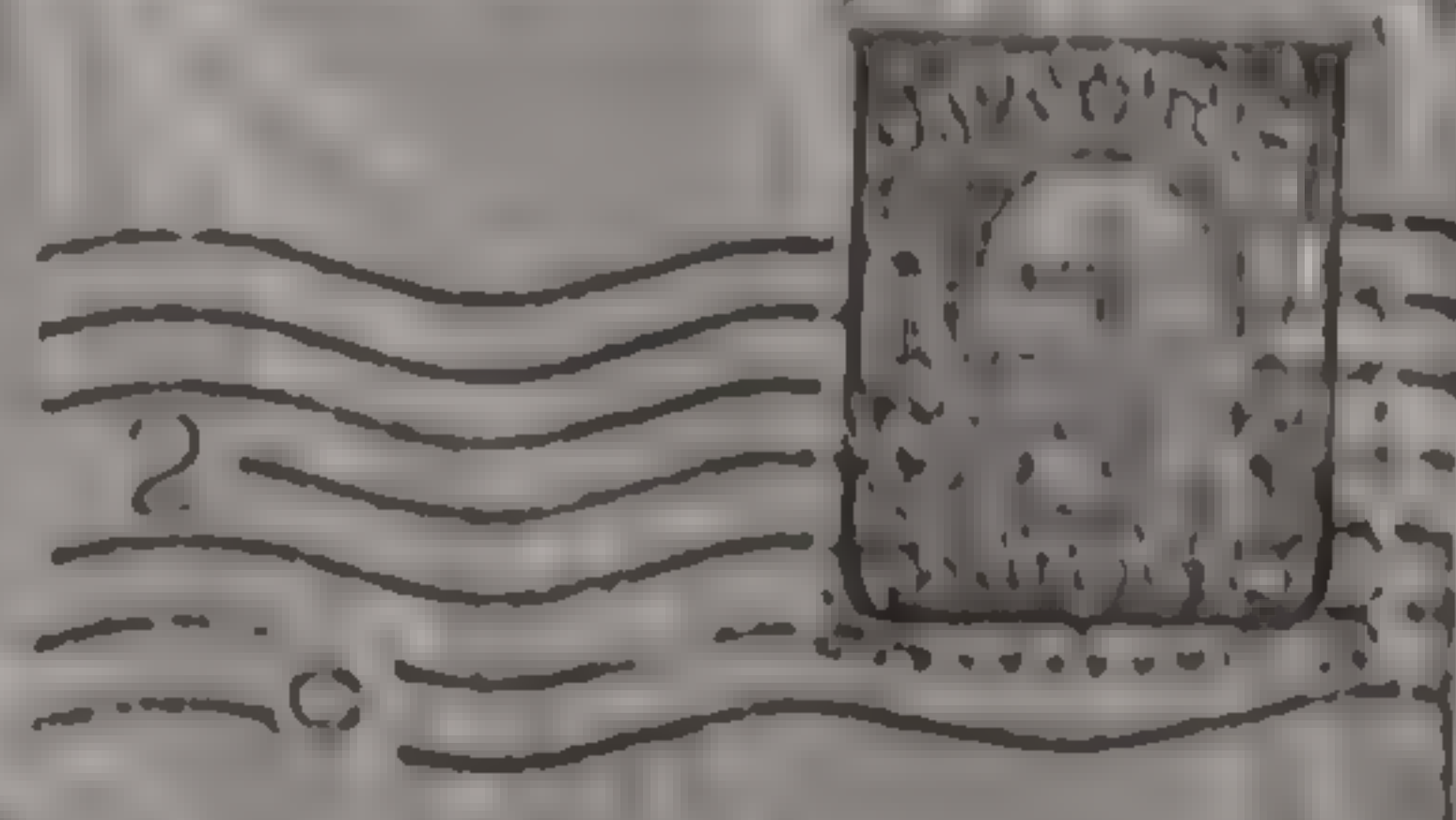
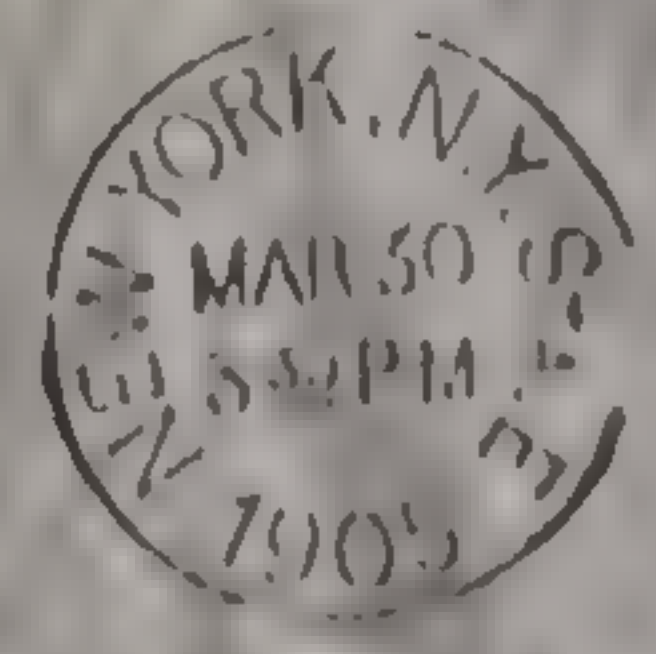


New York March 30, 1905

Dear Mr. Scherff,

I received your letter of 2nd M. T. Co.
 at this date. I am sorry that I
 cannot answer you more fully at this time.

Please excuse the delay in my answer. The
 business of the company is very busy at present. The
 directors have just met and have decided to call
 a meeting of the stockholders for the purpose of
 discussing the matter of the company's financial
 condition. I am sure that you will be satisfied
 with the result of the meeting. I am very sorry
 that I cannot give you more information at this time.
 I am, Sir, very respectfully,
 Yours, George Scherff



Mr. George Scherff
 Wardencliff

...together!

and the paper says that signs of double
No. 625 discovered as usual the alien
has deserted. I know that we play a
the double the machine. James - James a law
will work all right with the clasp
but it seems to me of the same substance.
The my apt. where I think I have
the corner the dear me. would
as a shop was located the road for
case: I put bread a Peter
bring the discovery of the
have a very much when the
every. I am writing

The Waldorf-Astoria
New York.

April 3, 1905

Dear Dr. Schenck,

Your letter has just
reached me.

I have of course
your notes and some
thoughts in getting
all together. For a day
we have been here

Wednesday morning

I went to the ~~house~~ ^{apartment}
To bed - Engemann
has deserted - I have
to drive the machine
with all right
but it seems more
like my apt. driver
than like the doctor
Do not mind or Peter
He discouraged him
very much when he

My dear Sirs of doubt
and recent C. L. and

that we play

have - some or have

with the blue print

of the new machine.

I think I have

made good use

of the new machine the

evening. I am writing

then the effect

It just seems to me

that the boiler (and in

note) of H. Hegerman

shows on the fire

show before the case

~~over the whole of the~~

to say the least. The

case is not as much

as in the case of

helgaten with the

from the engine, some

Ernst

the

wrote about me in through
I am confident of success
in my position. I have
yet from my friends. I believe
they have heartily welcomed
Thomas.

A lot of difficulties
trouble me. I am
sure that I am
not good. I am
not sure. I am
not sure.

Sincerely

W. T. C.

The Waldorf-Astoria
New York.

April 5, 1905.

Dear Mr. Schaff,

Your letter with German
translation just received.
In the next mail I will
send you the German
translation according to
the German Patent office.
The German Patent office
is now proceeding the
process. I can not re-
member these particulars
and I am sure that

last night and put off the
report from ~~England~~ also column
of ~~repaired~~ and from 13
July. The Italian Council
made trouble and then
power of the day will from
only to-morrow. It should
set a hand there. But
it is big and that. The
Dome can even still be seen.
I can't say the ~~last~~
opportunity that the work has
not shown up. And certainly
rejoice the necessity of
a more quiet at Windsor.
Perhaps he is ~~seeing~~

revolution down there. The
President elect is a Penn-
sylvania man, it is a
radical change.
As to the mechanics —
to-morrow the compressors, valves
and gas by, connection to
engine will all be ready.
About shafts and some
parts of connecting pipes
for section and com-
pression. But there is
one the ~~last~~ work of
fitting to fitting.
I can not tell how
all ~~the~~ will take. The

The Waldorf-Astoria
New York.

April 5, 1905.

Dear Mr. Scharff,

Your letter with German
translation just received.
In the next installment, which
should reach me to-morrow,
please write down an
introduction according to
the German Patent pattern.
The same preceding the
claims. I can as re-
member these particulars
now. I

...right at 10 off the
papers for ~~England~~, also columns
of reports, and from as
Haly. The Helian Council
made trouble and then
... of Attorney will go to
... morning, It should
... here. There but
... that. There
... can be sent from
I can say the last day
... that the work has
... and
... necessity of
... more of Henderson
... seeing a

The resolution down there. The
colours President elect is a Penna
as German man, it is a
most radical change.

As to the machine —
to monitor the compressors, valves,
long as legs, connection to
external bits all be ready,
blow-off valves and some
parts of connecting pipes
for suction and com-
pression. But there is
one addition work of
fitting to fitting
I can not tell how
it will take. The

1000

...

1922

The Waldorf-Astoria
New York.

April 7, 1905.

Dear Dr. Schaff

I received your letter
this morning but was unable
to send you definite in-
formation before this morning
when I wired you that
some party - Cane, by, and
Company were going and some
will depart 7 o'clock
train. Charges are prepaid.
I telegraphed to Pioneer Bro

Dear
 Mother
 I hope
 you are
 well
 Love
 Mary

They say car has been shipped. The
should reach you today. The
or to-morrow. It will be apparatus for grinding the
important to get Heger's points but to be arranged
new boiler in time. The for C.I.C.
doctors are sending another Harbison has promised to
Carload which should arrive come over when we reach
a few days later. Live - about 1000
The work on the rest of or perhaps before.
machine is well advanced. Expect to come over
It is possible that we shall Sunday to settle all
have it all together here by relations connections and
Tuesday. I have been dis- running.
appointed at some chambers. Have no news as yet
but it can't be helped. from my friends. Suppose
The connections are quite to - they are heading off!
over, every steel

To do that for my pleasure
 which you know me at least.
 You ought to be able to
 force the books by using
 post card as fuel, Perhaps
 a reported card do the
 business.

I believe that in this matter
 your judgment will be the
 best. I am sure it will be
 the best you can do. The
 only rule I want by the books
 once more with me
 keeping up and constantly
water should be low.
level of the river

P.S. Please answer involved politely and say that
 a new edition has been completed in preparation and

MS

April 12, 1905.

My dear Dr. Schaff,
 Trouble, and trouble, again!
 Otherwise I would have written
 before this.
 I am sure that the importance of
 the T. M. Co. I suppose some
 kind of letter has come up
 which seems big to me
 just now.
 To-morrow the war will be

express the value of some better full his disordered as
pipe connections for the machine. pretty. I got your message
This is from your work please to take that it was not
take care of it. Suppose not particularly to suggest some-
prepared. Even in peccato! thing by telegraph. Remember
we are not making the machinery that we find the better one
'mild' in the world. I will the same affec-
with all things. As we are? Suppose
the people I fear that if you try to fill the lower though
are like the rest of this world a low looking man he that
I explore all. The next week off all values. I told the
ought to bring the promised others to-day that the blow off
services. The to values are looking and he
I do not care if we are a loss. Suggest sending out one of
Your piece in jumping the gun. That I was afraid

AS

April 12, 1905

My dear Dr. Schaff,

Trouble, and trouble again!

Where I want to be with

before this

to be in

to be in the same

to be in the same

to be in the same

to be in the same

to be in the same

to be in the same

to be in the same

express the value to me
paper currency for the nation.
This is sure to be with pleasure
the love of it. Express not
prepared. Even if peccato!
be on the contrary the grounds
with in the to be
all. all. I fear that it
will take the rest of this week
I capture all. The next week
ought to bring the promised
services. The to be when
I do not care if it is a loss.
Your piece in promoting the

letter full his dislocated are
greatly. I got your message
to take that it was not
possible to suggest some-
thing by telegraph. Remember
that in putting the valves on
I will see the same effect
as in the case of the valves
you try to fill the leak through
a hole leaking can be shut
off all valves. I let the
valves to-day that the flow of
valves are leaking and he
suggested sending out one of
his men. That I was afraid

To do that for the ¹⁰ persons
which you know are at least
You ought to be able to
force the water by means of
port and as such, perhaps
a regulated water in the
business.

I believe that the following
you will find of interest
level of the
the the level you see. The
any rate, I am by the water
once more with a new
keeping eye constant
water should be low
level

P.S. Please answer enclosed politely and say that
a new edition now complete is in preparation and

that is one of them it will be
the water level

And for himself Friday
to come get them. He
will need an order of

2 3/8 " (Shoulda more perhaps)

Kindly write him so that he
can find something to prepare.

Times ~~will get~~ Times
all around. But then
a big one as you saw when
last Sunday. If everything
can be prepared Wednesday
to Thursday will be out Sunday.
I think we ought to get it
ready.
Things will for yourself just now
Sunday at 10:15

The Waldorf-Astoria
New York.

April 19, 1905.

Dear Mr. Schmitt

Finally the company has
come with entire success as
you may see from inclos-
ed clipping of N.Y. Con-
tributor.
In the Harvard at Times
you see names in
some of the names names
were after him at 12 P.M.

The night, probably, is the Song we have a drawl
 near some "about" fresh. The first of Sugar.
 I repeat information and let me know over
 the machine was not a
 those papers, probably the spirit
 The machine is used.

My special order for 30 books were filled anything better than books from today. I am interested in your work if to see if anything was printed recently. I am sure to have the accompanying

was printed correctly, I have
 a copy of the original of the
 note to the Government and the
 printed form for the use of the
 Government of the State of New York.

The Waldorf-Astoria
New York.

April 19, 1905

Mr. Schuyler

Finally the company has
come with its leave and
you may see you in the
clipping of N.Y. Con-
tributor.

In the Herald and Times
you find the name of
the same person
were after him at 12 P.M.

last night, probably, as the
news was not so fresh.

I regret information
the mention was made in
those papers.

My sympathies for the
war have been very
strong from the beginning.

I am interested in seeing
if L. can be made to

was printed in the

single copy which
was to be the same as

the one in the hands of the

likely as the
is fresh.
also 2
and is

the following
the house
12 1)
very much
style of
all 2
the 1st
as 1)
from here

Long we had a double
with the price of paper.
I had no staples over
you probably too spoiled
here. This matter it seems
may be cut off a piece
and screw on an extension
they about one day, may
extension as you may
agree.
plans for arrangements
to reach you
I am. If clear

could see himself Friday
he could get them. He
will need an order of

$2\frac{3}{8}$ "

(Shoulda more party)

Kindly write this so that he
can find something or prepare. To

Timothy wrote get the Traveller

all over. But then you

say he is a good man man

best thing. If everything

can be prepared where it

is prepared will be out Sunday.

I think we ought to get it
ready.

Things will be yourself just now

Sincerely
Wm. F. Allen

I got my present today.
 Thanks for such
 a letter.
 Yours truly
 Susan

The two pictures for
Comptroller's office for with
the L. M. M. R. M. C.
The L. M. M. R. M. C.
The L. M. M. R. M. C.

at the following court
house at 10 o'clock morning
Please note importance of course
The order to be filled he can not make any
as to the upper compression ^{error} in filling
is marked 1. ^{outside} The ^{not} ^{portion} to its
the other which goes ^{inward} by the side
of the lower compression ^{outside} it goes in
series to have ^{there} of ^{main} ^{ways}, bends
the ^{mark}, you have the drawing
Don't think ^{common} of the mechanism.
Why he do this work by a ^{small} ^{shop}

The Waldorf-Astoria
New York.

April 19, 1900

Mr. Scherff

I am expecting you to
be away to New York

very soon. I am
very anxious to see you.

The two pictures for

comparison will be with

the two pictures of the day

of the day of the day

the day of the day

Let the following copy be
inserted for my memory
Please note compositions
The first line to be filled
in to the upper composition
marked 1 and 2
The other line goes
into the lower composition
marked 3 and 4
The work
should be done
very early in the work

work

4. 11. 1944

will be necessary, To
check the fire in battle
as possible. The work
of the division is all
well to do and the
the work will be done

and the
the work will be done
the work will be done
the work will be done
the work will be done

I am by the way, saying
the work will be done
the work will be done
the work will be done
the work will be done

Library by Saturday eve-
ning and we ought to
run the machine from
day.

We are waiting for the
book the machine has
improved and we
have a good one.

It is a good one and
all right the first one
the price was about
about 10 to 15
on one of the
biography etc.
L. M. C. C.
100

The Waldorf-Astoria
New York.

April 20 1915

Dear Mr. Schuyler
I have written on
my return home. I have
been

to the
There is a building
The fact however that
in the building another
column from the
The building is the

I believe that I cannot and stay till Sunday
safely depend on her evening. I am so sorry
for giving us her house if Clark should come
temporarily at least should Friday (the evening) and
that foot go further than not be. I am so sorry
to be so. I am so sorry. I am so sorry.

I am disappointed in
the fact of important
I find the job badly. I am so sorry.
I am so sorry. I am so sorry.
I am so sorry. I am so sorry.
I am so sorry. I am so sorry.

The Waldorf-Astoria
New York.

April 20, 1900

Dear Mr. Schuyler

I found myself on
my return home late this
evening. The

There is no possibility
the fact however that
we may be leaving another
colony in from all
the spring had the

I believe that I cannot
safely depend on her
for giving us her house if
temporarily at least should
that fool go further than
he has already.

It is a very serious
matter to be considered
we found it impossible
to finish the job today. feel
that you will be able
probably come on the
with him Saturday, for

I went and stayed till Sunday
 her home in the evening.
 I am very sorry
 that I cannot stay longer
 but I must go now.
 I am very sorry
 that I cannot stay longer
 but I must go now.
 I am very sorry
 that I cannot stay longer
 but I must go now.

The Waldorf-Astoria
New York.

New York

1904-

Sept 20

Mr. Tuck
you must
give me some money
for my interest I will
not stand longer
if I do not hear from
you to morrow I will
go down to Wadsworth
and look you over.
Out I have all
the money I want
no more money.
Yours S. O. Saxe

The Waldorf-Astoria
New York.

New York

1904-

April 20

Mr. Fisher

you must
see me some day
for my interest I will
not stand longer
if I do not take leave from
you to morrow I will
go down to Wadsworth
and look you over.

Out I have all
the records I want
no more holding
Yours S O Saxe

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BRATT BUILDING RESTAURANT,
PHILADELPHIA

GEO. C. BOLDT, PROP.

The Waldorf Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York April 21 1905

Dear Mr. Scherff,

The printers have been expressing this afternoon
with 10 o'clock hours. Hartman
is supposed to come out tomorrow
and I am to leave at Wednesday the Sunday.
"For the most desired gold comb." Have my
yet solved the problem that confuses you
with the expression. We very much dis-
appointed at the delay of your little
transaction. This evening probably the
4 valves (special) for the machine will also
reach you. This means a new difficulty.

The rest of the machine will be ready
Saturday and I could either bring it on

I saw her Sunday, & if you can
express it 4 P.M. on Saturday then
I shall see her on Saturday evening.
To day I have an appointment with
Mr. B. but it is not likely. They have
some more coming at home, I have an
appointment for the 11th, you will understand
that I am not going to be away
about 1 week. I shall be home
as I have the matter in working order
I think I shall be home back,
The matter will be a surprise early body.

Yours
J. P. M.

J. P. M.

P.S. Hope you have received my former
letter explaining the feeling of
persons, so as to get the most particulars.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

Dear Mr. Scherff,

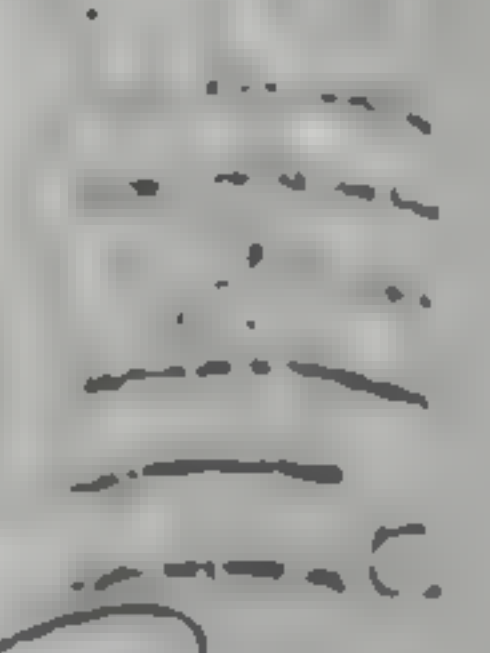
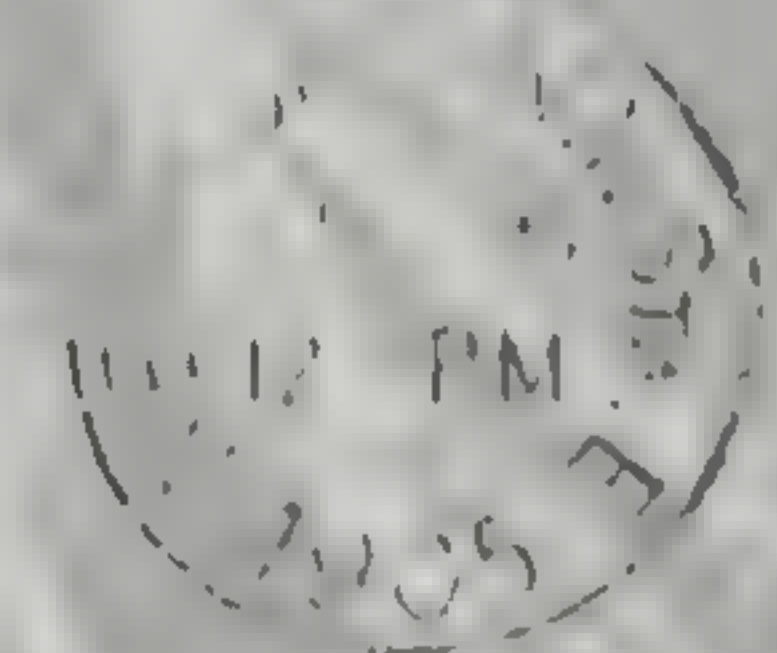
New York April 26 1905

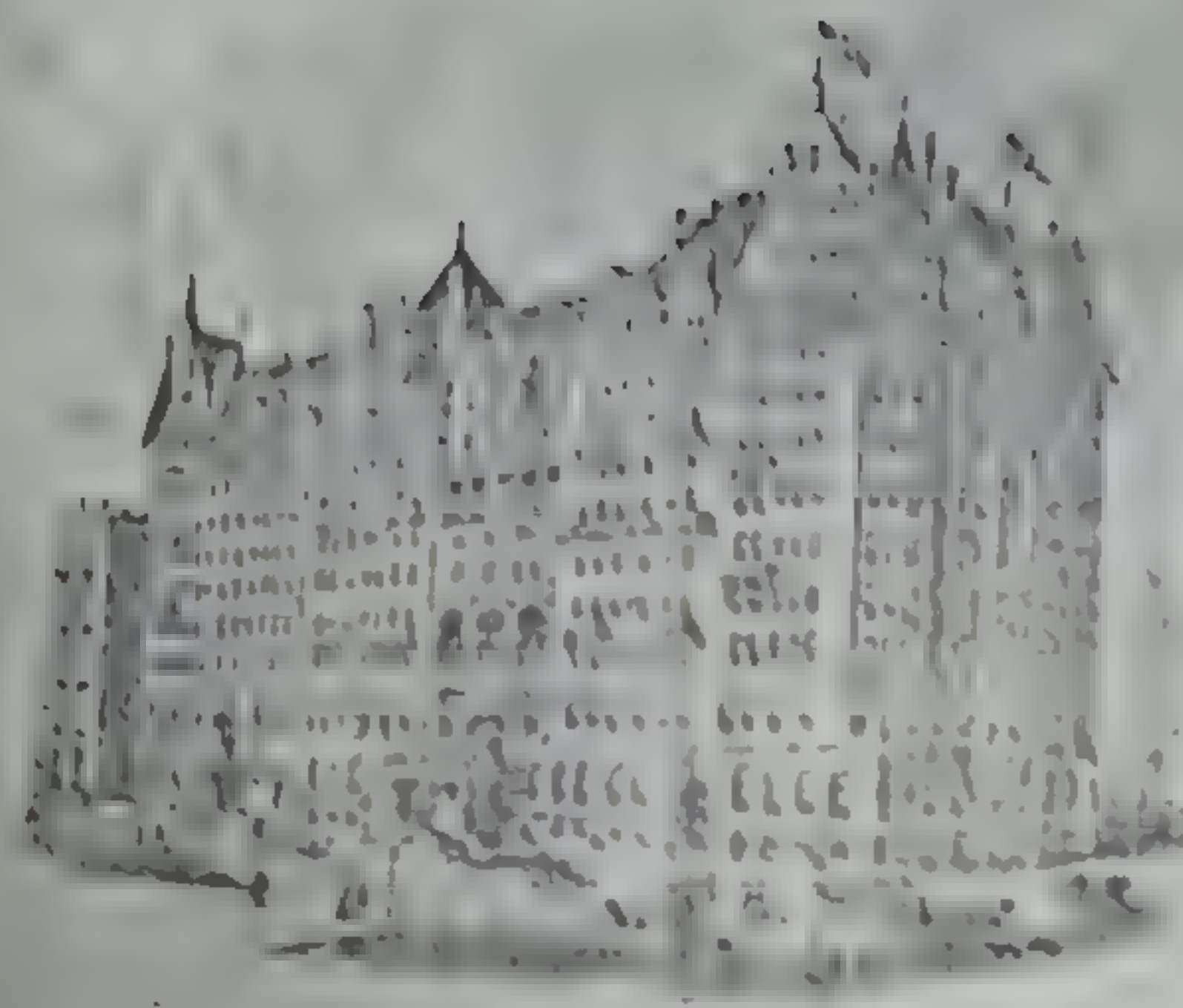
We have agreed to meet at the Waldorf
10:30 (my room) tomorrow evening. If
you do not have time to further on
this matter you will have this to know
you to be present. I think you can take the
3 P.M. train as have plenty time left here
after your dinner. In the afternoon of your visit
you will have a good opportunity to make your
coming.

It is possible that you will have to
bring out some few of papers, possibly

Mr. George Scherff

Wardenclyffe





THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

Dear Mr. Scherff,

New York April 28 1905

I was awfully surprised to receive
your letter yesterday that of course of
course that does not apply here the
cheer should be the same.

This evening I have completed the
bookings (you understand) and they will
reach you with 11 o'clock as I
have already wired the afternoon. Your
letter was delivered to me at 11 P.M.
and I am hastening to catch the mail
and tell you that I shall again

Mr. George Scherff
Warden of the

asked Hartman to come and see the house
in the afternoon and to show it 7 P.M.
It would be better to have steam in the
evening. However, if Charles can come
either Saturday (6 morning) evening or very early
Sunday he might be able to have one
of the cylinders and put the two shavers in
them by Sunday afternoon, for there
is not much work to be done at
this kind of machinery. Suggesting by
the arrangement with them on receipt of the
and ask him to come Saturday evening or
the next day the morning, Sunday or Sunday
he might be far enough that we could
leave the machinery. If possible if he comes
over on the 10th or 11th he would be
a little better. I can not see how I
can bring out a shaver but I may find one
in the morning. If he brings the shaver, then
while you can come and see the clock and have
some steam in the evening.
Do not mind gauges and wood flanges Henry and Ted
The boring of the cylinders and fitting of bushings is the important work.
P.S. Charts and bushings are prepared. Has the repeated piece arrived?

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

Dear Mr. Schuyler, New York April 28 1905

I was ^{anxiously} disappointed to receive
your letter ^{advising} that up to date of
course that has not applied to the
case which is in course.

In answer I have indicated the
bookings (given notice) and they will
reach you with 11 - hours as I
have already said the ^{information} you
letter is dated and to send at 11 P.M.
and I am hastening to catch the mail
and tell you that I shall again

asked Hartman to come and see the house
in the afternoon and be there at 7 P.M.
It would be best to have steam in the
evening. However, if Clark could come
on the Sunday (6 November) evening or was only
Sunday he might be able to have one
of the cylinders and let the two slaves see
them by Sunday afternoon, for there
is no more work to be done at
this kind of machinery. Suppose you try
to communicate with him and receive of it
and ask him to come. Saturday and Sunday
he would be at the engine, but on Sunday
he might be far away. But we must
let the machinery. After consulting he comes
out on the morning train. The house will be
burnt to the ground. I can not see how I
can bring out a change but I may find one
in a moment. In the meantime to the effect, which
which you can communicate with Clark and have
some steam in the evening. Do not mind gauges and wood flanges. The
The boring of the cylinders and fitting of bushings is the important work.
P. S. Changes on bushings are frequent, has the repeated piece arrived?

The Waldorf-Astoria
New York.

April 29, 1906

Dear Mr. Schuyler,

Mr. R. was not down
today and I shall
have to look for him
again tomorrow. Last week
they were not quite certain
that he would come to
the office before Tuesday.

Have ordered me two
"Jett. ~~Black~~ ^{Black} ~~Black~~ ^{Black} #37 ²⁰
very rich in benzene 6%.

is to be spread
about 500 lbs per
acre about

The ground cultivated
so far (1/2 of whole
method is finished. The
crops seem to be

The largest (American
Agricultural Chemical

Co) and they seem
to know exactly what

large Island. They pro-
vide to send at once

You will get 100 lbs
no. bottom which I

spread
from
about
miles
thence
The
the
American
time
can
have
of four
so soon
at I

went to see the
pure my service devices
Please do not use the
but put completely away.

The same people are
preparing now my cell.

The other has completed
and 400 are studying.

for students will go
off to-morrow.

Have expressed I have
bills for placing the
small machine behind

by anyone. I think
that when it is sent

quarters with valves
of the new light water
and somewhat larger
is in the work
well.

As you have done
with the same
day.
have

The Fall
they
the

the

the
very

The Waldorf-Astoria
New York.

Apr. 29. 1906.

Dear Mr. Schuff

The Pease C. have
stopped all except
the small copper -
beaters. They tell me
that the large copper -
beaters are rather weak
but I think they will
do as we never need
to handle them except
when empty.
Love yours I forget

to tell you to make

up another copy of the

two papers which

we shall have with

them

I am expecting to

arrive one day after

leaving the

log to the boat for

orders (3 papers) and

2 barrels of rice for

a last

batch of rice

to make something

but I forgot that it was

which I had when it is sent

making
which will I shall things we may
need yet.

to I thinking how to plan
the more convenient)
to find the place
behind the big engine
at the back. Connection
by for to various in not
difficult as you said
from the large reservoir
over in above and to
and the

very

run under the gallery,
if we could be sent
for with the Colonel into
the oh' house.

Running

Taylor

be
To
shy
the
last
that
fence
but
do
to be
then
for

The Waldorf-Astoria
New York.

May 1, 1905.

My dear Mr. Schuyler,

I enclose a card

from the Waldorf-Astoria

Hotel, New York.

Very truly yours,

John D. Rockefeller

Enclosure

is one more card

from the Waldorf-Astoria

with Erasmus & Palmer as I
immediately accept but
of this so that when
I am on shift with
the loco can be handled, but
to not attempt to survive though
the shift, the loco will I am
not hiding still my
as
will be made.
I am all the parts clean
and expect and, also the
valves so that we are I have
not been able in pulling back
the machine again together. The
I intend to use steam as an

as it is very impor-
tant to provide for la-
boration at our first

be headed, with the machine
to surround things in the air.

even now I am perfectly confident
that we are only a little

away from the point where
we shall have the machine

only when the machine is at

we are I have already found

pulling together of various things

together. The machine was not

seen as expected and I

shall direct the best re-
medy for the evil I know
of by the time I come
out. It is very early
that I shall drill
for holes in the shaft
Plan to have all the
books which are
now in possession
removed together
at least
hoping the same
have a thorough
review I remain
Yours very
truly

Wm. T. L.

Wm. T. L.

shall drive the best re-
sults for the soil I have
seen by the time I come
out. It is very likely
that I shall drill
for holes in the shaft
Please have all the
tools which are
needed in getting
measured. I got a
at last

Hoping that we shall soon
have a thoroughly satisfactory
result I remain

Your sincere

Wm. T. Lee

The Waldorf-Astoria
New York.

May 1, 1905

My dear Mr. Lee

I received your letter
of the 28th and am
glad to hear that you
are well.

Very truly

Yours
J. P. Morgan

Had you please to the

With Erasmus to Peter as it is very impor-
tant to provide for la-
of the so that when location is our first
I am the shaft with
the base can be handled with the machine,
to not attempt to overhaul though we may not
the shaft, the base will I am perfectly confident
and so

and to make
have all the parts clean
and repair out, also the
valves so that we are
not having delay in putting machine of record
the machine again together. The bearing is not
I intend to use steam as expected and I

A black and white photograph of a large, multi-story building, likely a school or institutional structure, with a prominent central tower and many windows. The image is grainy and has a high-contrast, almost stencil-like appearance. The building features a central section with a taller tower and a series of windows that appear to be arranged in a grid-like pattern. The overall style is reminiscent of a photocopy or a high-contrast print.

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

GEO. C. BOLDT, Prop.

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York May 8 1905

Dear Mr. Schaff,

I have just received your letter,
in regard to the question you report
is being asked by the State. There
is no doubt that the State is
fully prepared to answer the
question. The answer is
a full and complete one. You will
be satisfied with the answer.
The State is ready to
answer the question.

and thanks for the letter, but a very satisfactory answer
has not yet been received, as
it is not yet possible to say
whether or not the matter will
be settled. I am sorry to hear
that you are not well, and
hope you will soon be
able to return to your home.
I am very glad to hear that
you are all well, and hope
you will continue to be so.
I am very glad to hear that
you are all well, and hope
you will continue to be so.
I am very glad to hear that
you are all well, and hope
you will continue to be so.

P.S. Please let me know
the date of your next
visit.

Yours
J. F. Cook

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
SULLY BUILDING RESTAURANT,
PHILADELPHIA

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,
Fifth Avenue, 33rd and
and Motor Co Streets



THE ASTORIA

New York May 9 1905

Dear Mr. Scherff,

I was fortunate enough to solve the
important coal problem today as expected
that the car will be delivered by the time
it reaches you. The great number of
unfortunately affected of travelers,
please advise me as soon as you are
in the position to get up steam, would
like to get clear for a day or two if it
be possible. I am sure I shall have to suggest
a machine in case you think I can
put a good one from P. M. Reilly.
In order to avoid accidents such as
the last we shall have to take the
car from the logs of the reservoir.

limited of time for the improvement of
the air. Furthermore it will be necessary
to be careful of the air. I would suggest that
the air be improved by the use of the smaller
of the two windows for my purpose and the
large window in the corner (pipe 16" dia)
for the "Exhaust" and "Suction" connection. You
can easily change the pipe connection. I
repeat in order to avoid misunderstanding that
the air pipe for driving my engine should
come from the top of the window and not
from the bottom. Furthermore one of the new
oilers (2 connections) should be used to
lubricate. The "Exhaust" and "Suction" of the con-
nection (Exhaust Suction) which greasy are
not a good lubricant as they contain
much grit.

I am perfecting my plan for the new
test which I have will be much more
satisfactory than the last.

I have a plan to bring out Crawford as
soon as we have everything in shape.
He is a fellow with a big head and big
mind and he will be able to work with
my plan. Sincerely, A. T. Cook

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "GOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA

GEO. C. GOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Court,



THE ASTORIA

New York May 16 1905

Dear Mr. Schuff,

I wrote this morning in relation
to some improvements to our
baptismal font. After a careful con-
sideration however I found that
under the present circumstances
a quick reply is not I am
sorry. According to my
plans to make things go as
they are now, and need you to
place the machine in the upright
position, also to make the

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
 HOTEL BELLEVUE, PHILADELPHIA.
 THE STRATFORD, PHILADELPHIA.
 BULLITT BUILDING RESTAURANT, PHILADELPHIA.

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
 and Astor Court.



THE ASTORIA

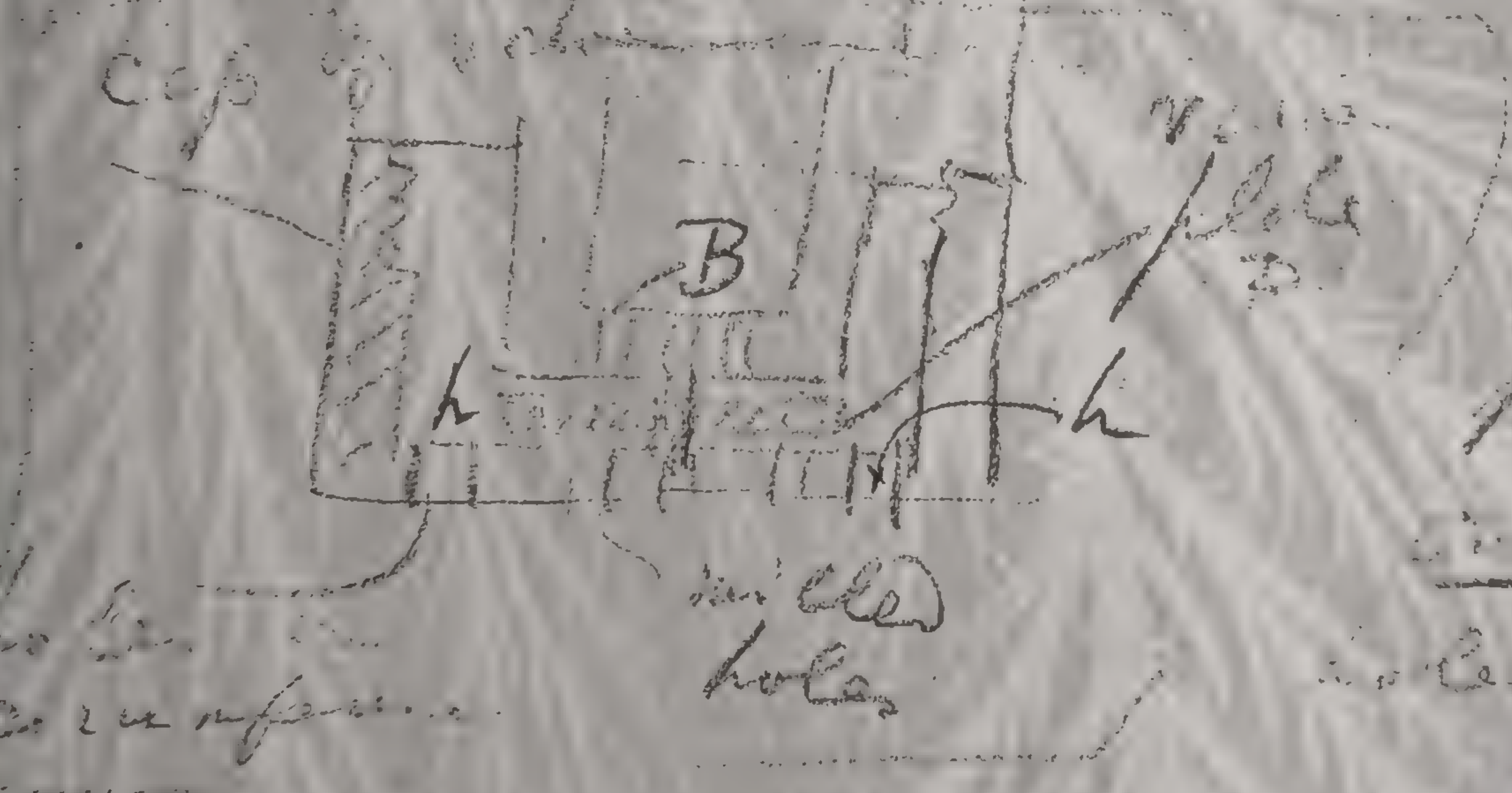
New York

190

It seems to me you are not
 a musician, only a careful
 in screening the right and left
 hand nipples, which you the
 to venture from the and the
 compression casting. Do not forget
 the graphic pencil! There should
 be also have one volume - that
 one preferably on the whole pipe.
 If you will do this with
 a soon as possible I think
 the whole to the agreement

to shape to them in our friends very
 shortly without the necessity of color
 or changes.

I discovered a mistake on the volume
 a re with the book. The original
 volume were fairly good but in section
 and of knowledge but in section
 volume was not as really and not
 much. You will see the necessity
 for following plates.



Having the
 explanation
 given in
 the chapter
 the volume
 and the
 hole h h

There is a hole in the
 plate of square stem
 the volume not properly
 the hole of the diameter
 part of holes h h as
 first time.

I have the volume
 the order to the
 plate of the
 cover a part
 the case in the
 the

W. T. Earl

NEW YORK CABLE ADDRESS "WALDORF," NEW YORK
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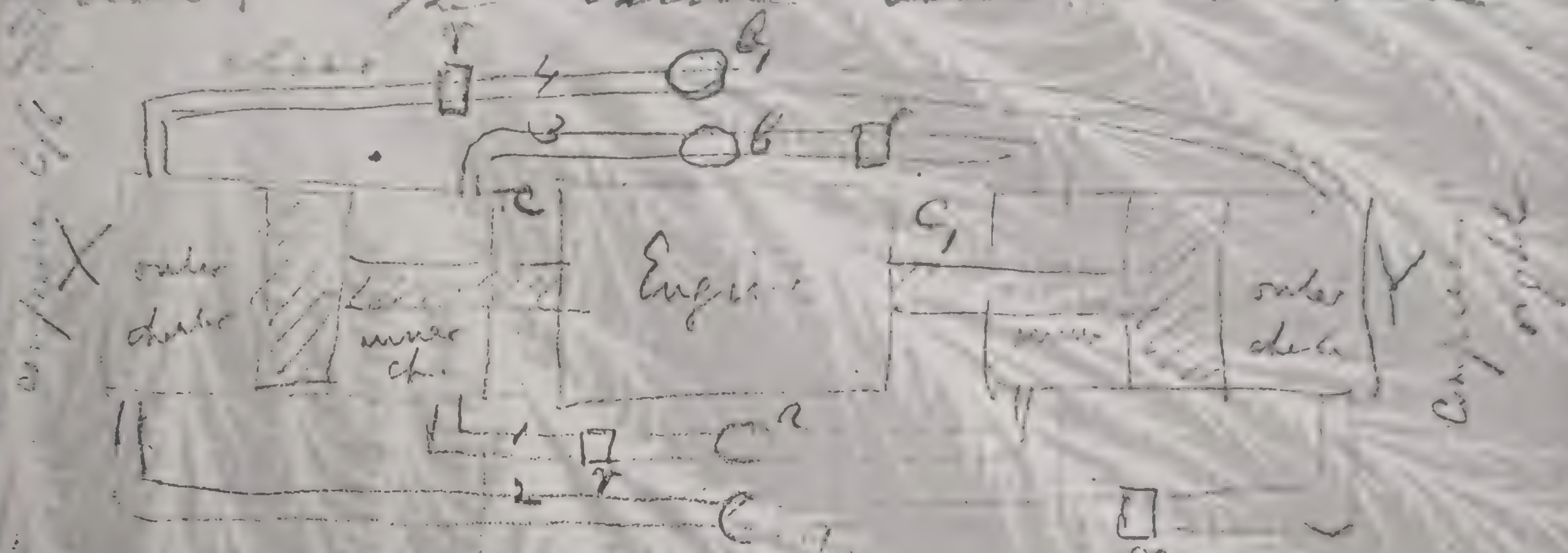
THE ASTORIA

New York May 16 1905

My dear Dr. Scherff,

After carefully considering the
 various suggestions on the compressor
 I find that the valves should have been
 connected differently, as a matter of
 fact in detail. Namely, there should be
 for one motor and compressor valves,
 for each pair of pistons. The
 corresponding
 valve the advantage
 is over, and also
 the new connected
 valves section
 of the compressor and
 the four
 of the four

Therefore there is a valve (for suction
 or compression) there, so in addition there
 are the valves, they work the two
 compression chambers will be equally
 affected. The sketch below will show



1, 2, 3, 4 compression chambers, - a a, suction
 valves, b b, compression valves,
 the arrangement of this kind will secure
 a perfectly balanced engine. Furthermore it
 will reduce the wear on the pistons & help
 them to run smoothly. The pistons will
 be in the same position at all times & will
 not be forced to move to twice the
 distance as in the ordinary engine. There
 are also advantages in the design of
 the valve gear. There is less wear on the
 valve gear & the engine will run more
 smoothly. The design is also simpler &

have not perfectly enjoyed a long
rest - especially in a position
I am collecting the water vapors and
signal to find you a pleasant surprise
when you see the water and
at operation.

From the water I can
not find that
I have some light for
the water of water. In the case I shall use
the water. I am
not sure of the water.

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
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THE WALDORF

THE WALDORF-ASTORIA, NEW YORK

HOTEL BELLEVUE, PHILADELPHIA

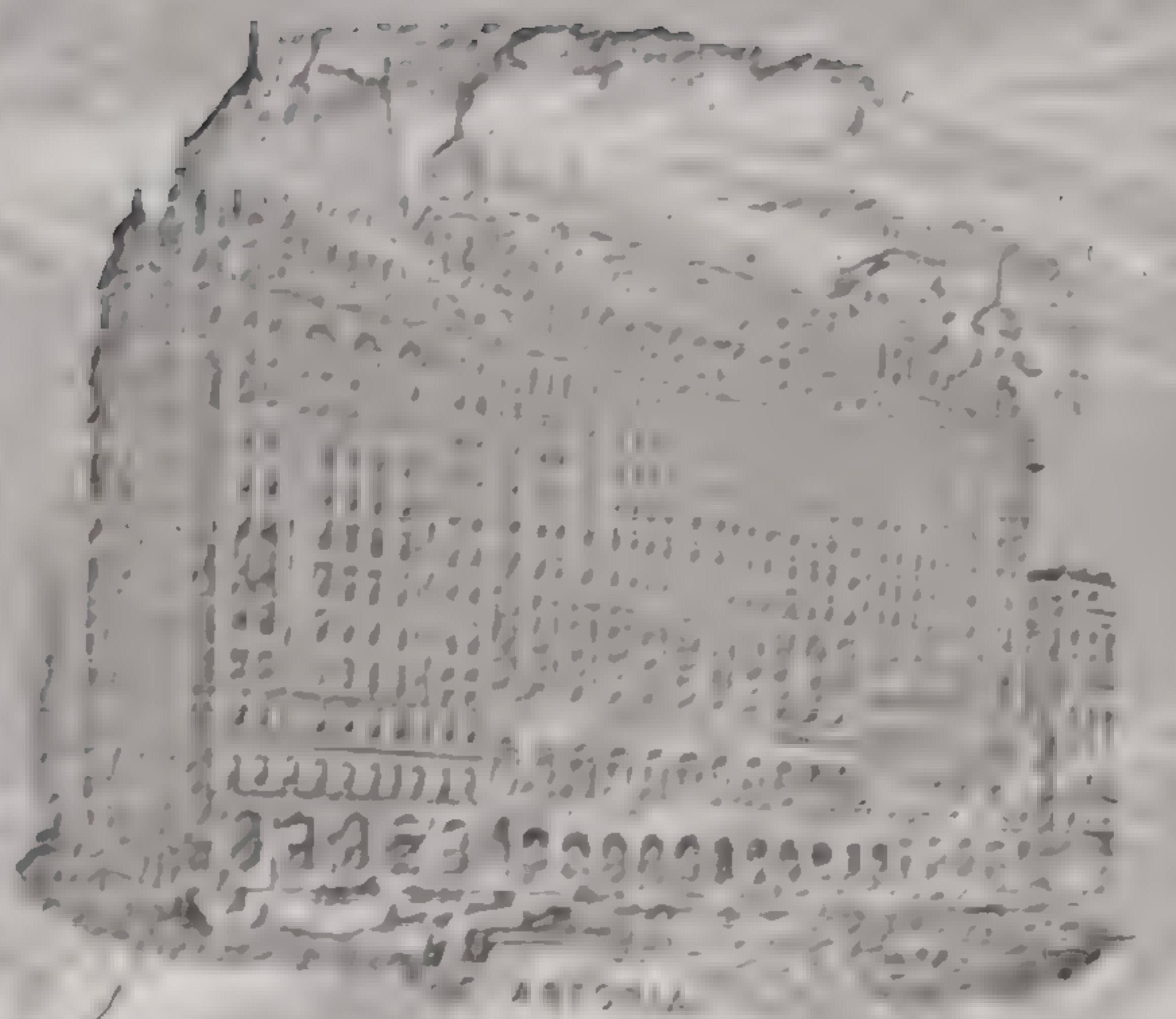
THE STRATFORD, PHILADELPHIA

RUSSIAN BUILDING RESTAURANT, PHILADELPHIA

GEO. C. WILDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 37th and 41st Streets
and Motor Court,



New York May 17 1905

Dear Mr. Schuff,

You letter has just reached me.
I am glad to hear from you and
sorry that you are in the city.
It is tough to have the
the children, but I hope they
but the journey will be
just a run. In fifteen days
he ought to feel better or else
be very sick.

I shall be able to come out

to - to - to - (Thursday) as yet, I am sorry
to say. The problem is still being solved
and I have been successful in
reaching the solution.

You are right. But the connection can
be made and the work can
be done to put up the valves. Special
features are necessary. The changes pro-
posed. The the machine will work at
all times for valves. The proper
method. What is the best in the
business for the changes
can be made on the machine.

Yours

W. L. Cook

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
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THE WALDORF

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GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Motor Court.



THE ASTORIA

New York May 17 1905

Dear Mr. Schuff,

You letter to me
I am glad to be
doing what you can
help to do.

It is tough to
be a woman, but I
am a woman and I
ought to be
very much.

I shall be able to come out

not need to
be a woman
to do it.

but the woman
to do it.

to do it
or else

to-morrow (Thursday) evening, I am sorry
to say the position is so unsatisfactory
that I have been compelled to
withdraw the matter.

You are right that the connection can
be easily made but it would be
preferable to put up the values. Special
figures are necessary for the changes pro-
posed. But the machine will work if
you will give values for proper in-
formation. What you need is to
encourage me for it. The changes
can be carried on easily.

Yours

W. F. Fitch

Handwritten text on the left margin, partially obscured.

Handwritten text on the left margin, partially obscured.

The Waldorf-Astoria
New York.

May 22 1901

Dear Mr. Schmitt

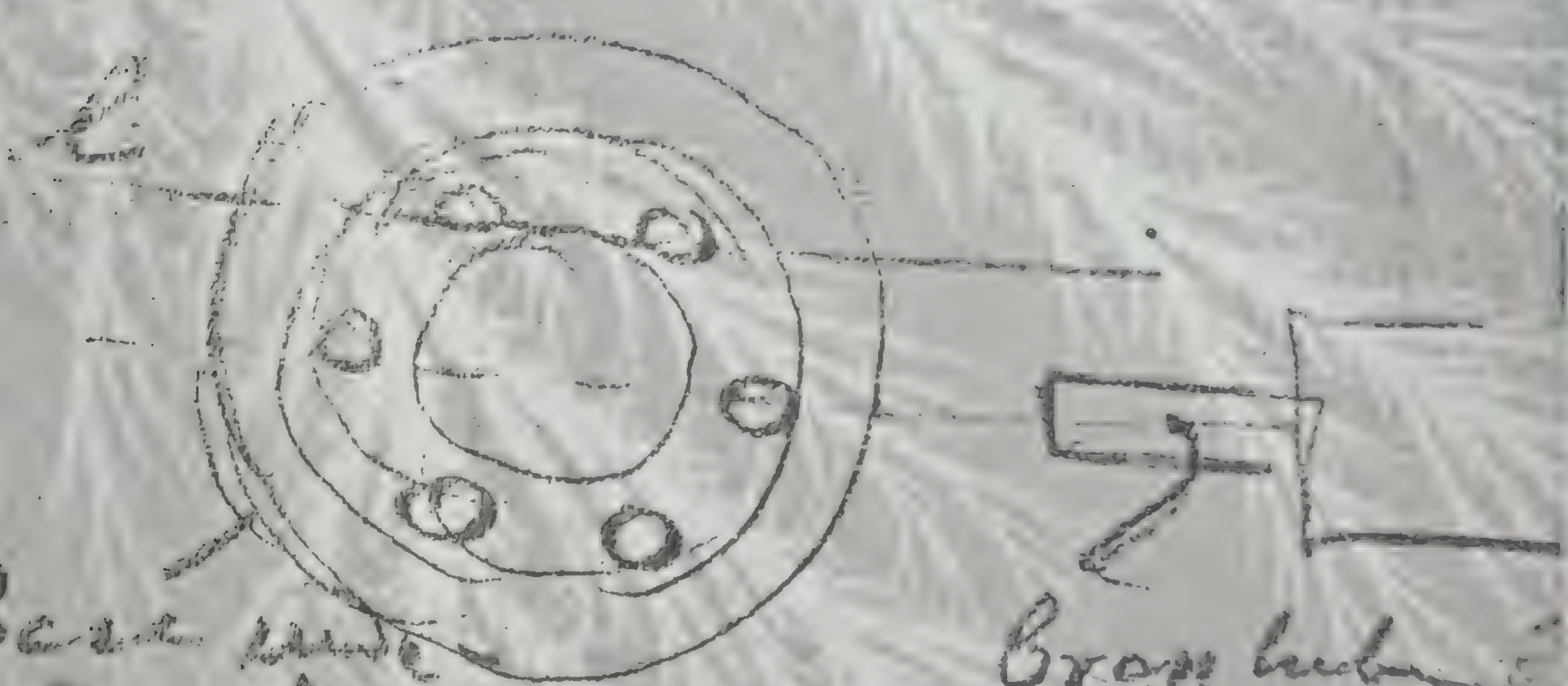
I have thought you -
very much interested in the
subject with the me -
dium last night and
in connection to the ex -
hibition that the ac -
cident as well as the
person of the scene

and respects from
 your friends
 Mary
 The
 her
 our

I hope you have understood
 all about the first
 thing of the independent
 case for the common flower
 by the holes and now present
 a piece of thick paper
 or card board and the

from
 Every
 will not
 the form
 are
 all
 the under
 the part
 depends
 ment flow
 out from
 paper

lets on drive. The
 line forming the center of
 the the lens never to
 the wall should be parallel
 to the center. Look this;
well
centered



Base under
 out from part and

Brown tubing
 attached to
 Tapered
 Component

The position of the center
 of lens should be determined

the more insubstantial beside,
 But

minutes of pleurobia
from roof. I think
you did this before
Cenozo should be on

a line of symmetry the
the ~~symmetry~~ expression

Calculating that you
will find the distance
about 1/1" deep and

will lead out bolts
accordingly. I think

16" bolts (over the

head) will do. The prev

or can not as far

Stop for a moment do here
at ~~the~~ ~~the~~ Put
the ~~the~~ ~~the~~ On
engine shell on an
armor as far as it be
will be a ~~the~~ ~~the~~
you will the ~~the~~ ~~the~~
the ~~the~~ ~~the~~
you can ~~the~~ ~~the~~
Repeating the process in the
you will do as for
well as Opie can you
ever make it will be

the position of the circle
have shown to date

do not interfere beside,
Put On The staff of
you know you will have
an
it will slip on the
of piston and proceed
down a long time
when you begin you will
down soon be choked
even in the ordinary work
for which I saw
can you for I shall
will have a couple

and will do. The for

him here in the
mean while

The paper get through

the the looking paper

a horse the

2nd last

2nd will write again

the at

2nd from

the of the

7th many

in last

W. T. S.

which is plausible
 from reef. I think
 he did this before
 Center should be on
 a line of symmetry in
 the diagram expressed

The Waldorf-Astoria
 New York.

May 22 1901

Mr. Schmitt,

I calculate that you
 raised about the hole
 about 11" deep and
 will send out bolts
 accordingly. I think
 16" bolts (under the
 head) will do. The

I have thought that
 fully over one experi-
 ment with the mag-
 net last night and
 one for the con-
 sideration that the cur-
 rent as well as the
 position of the screw

have been with the
 head which

The Waldorf-Astoria
 New York.

The Peter got through
 the the looking paper
 a standard thought of

are you told me
 is 4 1/2". This will
 be 5/8" - 3/4"
 for rule. Since

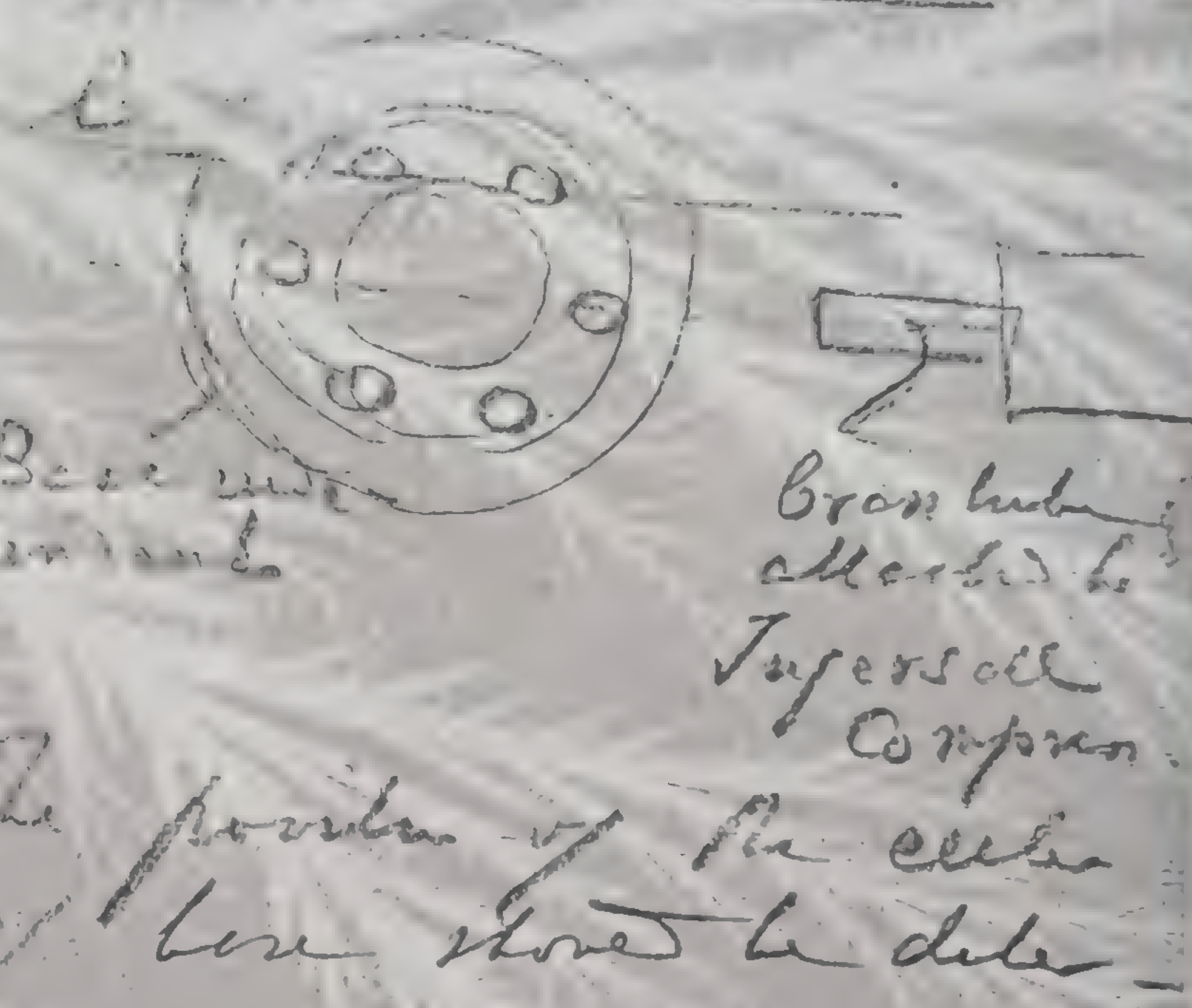
will make again and
 come out as a
 possible for
 name of telegraph

express the bolts and
 some last 6-norm
 which you get and
 are the colored
 which the head shot
 on the sleeve and
 perhaps also on the

Summary
 in hole
 W. T.

As noted from a photo on drill. The
 hole is made by using the center of
 the hole as a guide. The hole is made
 by using the center of the hole as a guide.
 The hole is made by using the center of the hole as a guide.

I hope you have made
 the hole about the size
 of the independent
 hole to the cement floor.
 Lay the hole out on
 a piece of thick paper
 or card board and the



shaft you should do more independent besides.
 Put On The shaft of
 the steam (copper) course you will have
 engine shell) on an arrow as far as it be slip on the
 will be and turn it piston and proceed
 you will then see it is long. Once
 then heat spots where you begin you will
 you can find down some be absorbed
 Regarding the process in the already work
 you will do as to which I sawy
 well as Opif can you for I shall
 ever make I will have a cable

obvious 3) Selfish pursuit 4) Little
 learning or pursuit 5) Low sense, 6)
 Low vision. The Waldorf-Astoria
 New York.

John C. G.
J. C. G.

Der H. Schrift

May 23 1961

I will please you
to know that I have
just an error in my
book in writing the
Latin in the history
of Congress. I shall
have it corrected
and send it to you

burying
house
in clove
wall

[illegible]

the ... together ...

... ..

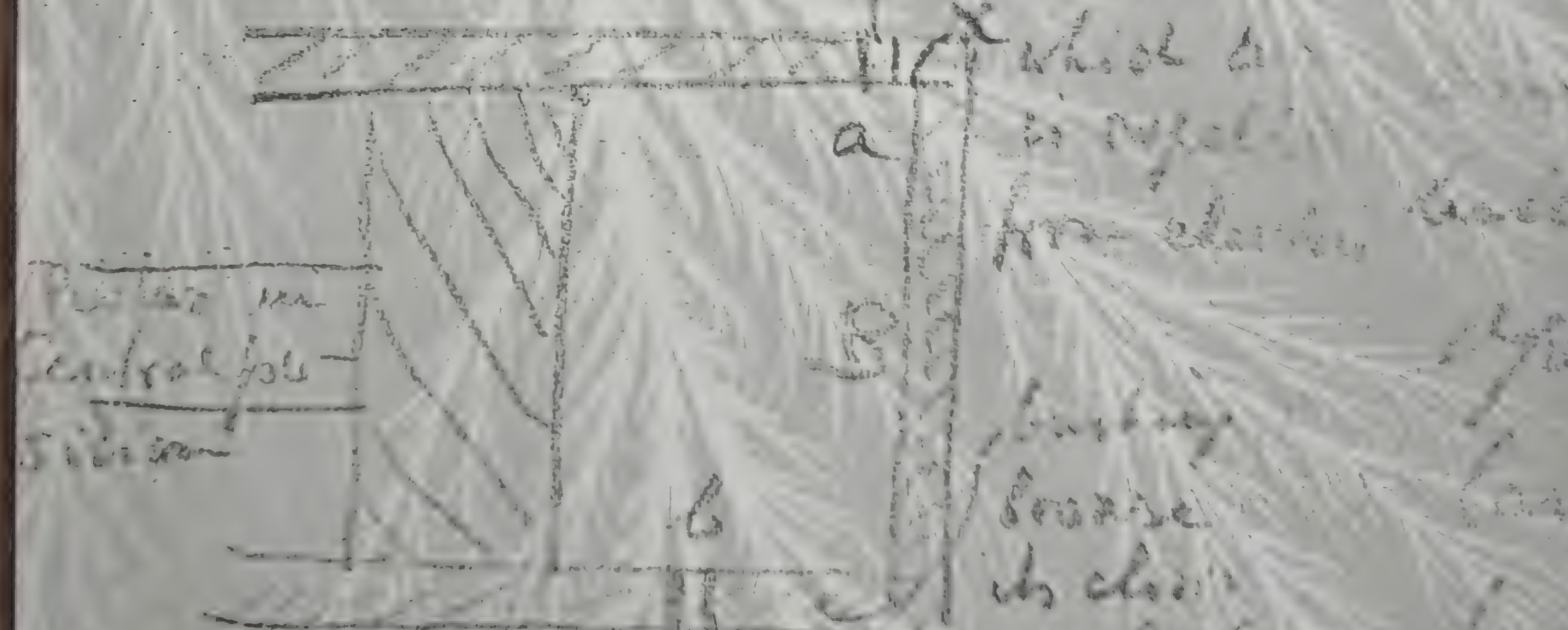
... ..

... ..

... ..

... ..

... ..



... ..

will be so calculated
that the full
compression of 100 lb
of steam is obtained, the
air which with remains
in the chamber (between the
valve passages) under high
compression will, when
the piston ~~is~~ back
away from valve B) expand
so far, that it is a
little below the atmo-
spheric pressure when opening
is is resumed. You see the
advantages of this arrangement
1) The discharge valve and change
over can be put at back
2) Compression is higher for reason

obvious
leaving
Gas side
on side
valve
excess
less
the
the
gone
made
hole
is
is
some
when

will be so connected
 that the full
 compression of the
 of skin & muscles, the
 air which will remain
 in the chamber (under an
 valve pressure) under high
 compression will, when
 the piston is withdrawn
 away from valve B) expand
 so far, that it is a
 little below the atmospheric
 pressure the opening
 is closed. You see the
 advantage of these arrangements
 1) The machine requires almost nothing
 from the top of the air column
 2) Compression is higher for recovery

The Waldorf Astoria
 New York.

Nov 2. Sunday

I am pleased
to hear that you
found an even
surface during the
winter in the
valley. I shall
be glad to hear
of your success.

The Waldorf-Astoria
New York.

May 23, 1905

Dear Dr. Schmitt,

I wrote about
notes on the business
meetings of the
Commission to have
the same after the
United Nations
in London.

Very truly,
Wm. D. Dr. Schmitt

[illegible]

low the
estimate will be
which will you please give
me the estimated cost
of the
I will send.
I think that as far
as the lower country
is concerned looking
from behind the
park being the lake side
the about the steep
in section in the
in particular with

I have wanted to
on the left for

I ought to. This is
all but a necessary
road for the system
is fixed as we take.

Account of the
Principles of the

W. R. E.

77

I have written him
on the letter. I am
I right? This is
all he is necessary to
know for the by com
be better as he likes.
Sincerely yours
Frank

M

The Waldorf-Astoria
New York.

May 23. 1905

Dear Mr. Schmitt,
I wrote about
notes in the house
building of the
Comptroller. It has
been our to be
directed to improve
the action.

Yours Sincerely
J. D. Schmitt

Dear Low Mr
Compassion I extend
velvet on white
with reference to
the matter on the
Compassion Center
sent to the address of
Roughness. This is
necessary for me in
order to give proper
attention to the
matter. I propose
to back the

— which may be
with you please give
me the information
of where mail
I think that as far
as the lower center
is concerned looking
from behind the
being the hole seen
about the length
is somewhat in the
the picture with

1000

of drawing the attention
of my secretary the
over her. I would
praise as follows:
+ first I would say
that I was a piece
of good wood. And I will
be perfect. Most the
series of the notes on
the calendar. Most
them after the one

I paid Aaron all right for every
Friday now as then expected.
you are welcome. I expect to have
experience at the dry light bolts
place of my former work, but I think
The one I think of will be better than the
the improvement and the current flow in
are being carried out in a better way than
the more I am paying out the
concerned that the holes I rely on
machines will be your well deserved

The floor with the
is a ~~very~~ ^{very} ~~thin~~ ^{thin}
Peter drill the holes
to the depth required.
Then put the bolts
in their position.
Then put the cast
(being in its place)
with the bolt, passing down at the
through the hole, - the bolts are
supported by hand pieces above the casting
There is also the
that comes in. It
would not pay to
run the engine just
for drilling six
holes $\frac{1}{2}$ inch in
diameter through $\frac{1}{2}$ "
of cast iron.
Suppose this is all
done at the
The bolts are
also sticking out
driven by hand pieces above the casting

still
the other
reserve,
all on
drilling
in the
new
the
something
capital

The Waldorf-Astoria
New York.

May 23. 1908

Dear Mr. Schuch,

I have started
the work today
I hope that
the program will
be successful
I am
convinced that today
after I have
to the building of

with the
the

Four

The Waldorf-Astoria
New York.

of showing the exhibition

and Hobson all right for every
one is then respect. I expect
certificates I expect to
at the day eight bolts
my soonest but as before
I think as the last as bolts
moment shall the drill for
coming my the second floor as
I am laying out the
the the holes I rely on
will be your well described

There is also the
but comes in. R

engineering skill
Six both will be
enough, the other
has a reserve, how
Can I call on
you for drilling
the holes in the
bar - I mean in
the base of the bar?
There is something
the is capital after
to be

Sag - One inch, the
well bed to make

The Waldorf-Astoria
New York.

of showing the combination
of any secretary that
ever has. I would
provide as follows:
First I would lay
out holes in a piece
of cardboard, or thin
paper. Mark the
centers of the holes on
the casting. Mark
them after the on

all be your well demonstrated

There is when the
the tub comes in. It
the holes would not pay for
required. Now the engine just
bolts for drilling six
holes $\frac{1}{2}$ inch in
diameter through $\frac{1}{2}$ "
of cast iron.
Suppose this is all
to passing down at that
holes - The bolts are
all sticking out
and punching the castings

the is a good
Sag - one inch, the
well bed to make
it very hot. Pour
in some bed - sag
enough to fill half
of each hole when
the ~~water~~ ^{water} is placed
after that the ~~water~~ ^{water}
can be removed and
the holes filled with
finally a little larger
drill can be run through
the holes in the center.
Then do as much of the
as you can. Finishing & filling
them of

The Waldorf-Astoria
New York.

May 24, 1905

Dr. J. S. Salaff

very fine, but (color, etc.)
I found a good specimen
that goes to the
Lakes between the

The Waldorf-Astoria
New York.

[illegible]

The first thing I noticed when I stepped
 out of the plane was the cold. It was
 a shock to the system. I had been told
 it would be warm, but it was freezing.
 I had to wear a heavy coat. The people
 here were very friendly. They were
 all smiling and waving. I felt like I
 had come home. The food was also
 very good. I had never eaten anything
 like it before. It was a real treat.
 I had heard that the people here were
 very poor, but I was wrong. They were
 very well off. They had a lot of money
 and they were very happy. I was
 very surprised. I had never seen anything
 like this before. It was a real wonder.
 I had heard that the people here were
 very poor, but I was wrong. They were
 very well off. They had a lot of money
 and they were very happy. I was
 very surprised. I had never seen anything
 like this before. It was a real wonder.

[illegible]

The Waldorf-Astoria
New York.

May 24, 1905

Dear Mr. Scherff

I send you this
afternoon to show
on the two (entire)
and previous) branch -
consequently I have
showed a good volume
for giving the
Lakes between the

The company the
 I shall also have all
 land given, the same
 as everything else that
 may be necessary down
 before the end of the
 year but I shall
 something earlier to
 complete to explain
 to you showing that
 we have been doing
 The Ten Men people
 are taking the school -

5

the map for the authors.
After couple conversations
have all decided I found that
the former was better, as the
words "soldier" were lacking of
clear that the comparison was
very done in difficult to place
back, I ~~with the present~~ ^{with the present} ~~findings~~
I ~~should~~ ^{ordered} ~~new one~~
visions but that will be furnished
to explain the horror. The new one
will remedy the looking
people of the subject, also
the steel permit being

as
have one) / a few days delay but
renew

believe fit of the Commission
proposed. They were
altogether too loose,
we pointed them to
many times. But they
have close following the
last accident and
they have occurred.

The Peace people
are taking her as
improved repletes
of steel. They are
not well better

draw it out of a
man

The Waldorf Astoria
New York

of
advice
has been
received
from
the
various
departments
of the
Government
and will
be
submitted
to the
President
for his
approval
and
signature
in the
exact
places
for drilling the
bronze

people of the interior, also
shall - permit to stay

as a few days delay but
I hope the report
will be commensurate
with our sufferings.
The next time we put
the machine together
of great depth to be
four days. One
day I have the machine
in good shape I can
do with a very slight
more, and with relief.

Control and order

to draw it out of any
rock

Place by D. and

the work done as much

as you can. That

looking for it

in any way

we can find anyone

in the area

that I see nothing but

the same as before

and I am going to

find it out

the way to

for 2 weeks

and I am going to

find it out

The Waldorf-Astoria
New York.

May 25, 1905

Wm. F. Smith

I did a lot of
 work last night &
 this morning. I
 have been very
 busy. I have been
 very busy. I have
 been very busy. I
 have been very busy.

you will have subject

that when the valves
were ~~closed~~ the valves
worked ~~well~~ and better
than by ~~hand~~ ~~not~~ ~~power~~.
I calculated for the various
valves in ~~and~~ ~~succession~~
the force necessary to
operate ~~the~~ ~~from~~ ~~the~~
the ~~for~~ ~~with~~ ~~ing~~
begin to operate by a
stroke of about $1\frac{1}{4}$.
For smaller strokes they
would become so ~~in~~ ~~action~~
or at least irregular
in their response. When

The whole business will
run on a course that is
sure to be successful and
the people will be
The new values will
appear surely and
then all parties will
be a whole lot
of it. $\frac{2}{3}$ of the
at for a large stock
Kant action will be
perfectly regular.
I feel sure that the
mechanical will work over
so much better than before.

The Waldorf-Astoria
New York.

May 25, 1901-

Dear Mr. Schuyler,

I had a lot of
be that something last night and
that some of
the noble and
the defect in color
of the colors. This was
to observe in the
last colors we are to
use.
You will be interested

that when the sun is
 over the clouds
 work the clouds
 the by here do not
 I calculate for the
 values in and
 the force necessary
 to be found that
 the first part of
 begin to operate by a
 stroke of about $1\frac{1}{4}$
 For smaller strokes they
 will become inactive
 or at least irregular
 in their response when

[illegible]

So I understand the
matter for them well
the absolutely to handle
a money is starting
a dropping in the
vertical position.

© now but right that there
the first of the company
for them and the first.

We have not sufficient
enthusiasm as they are not
interested in the
business.

Yours truly

Yours

The Waldorf-Astoria,
Fifth Avenue, 330 and 340 Streets
and Motor Court.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

CEO. Q. BOLDT, PROP.



THE ASTORIA

New York May 27 1905

Dr. Schuyler

I have been busy with the
 work on the
 wings for carbon and the
 compressor engine. The
 engine is now in the
 shop and the work is
 being done by the
 boys. The work is
 being done in a
 hurry and it is very
 defective. Everything
 will be over the
 of all we shall
 the filling of the
 have to be done

[illegible]

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS, "BOLDT, PHILADELPHIA"



The Waldorf-Astoria.

Fifth Avenue, 33rd and 34th Streets
and Hotel



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA.

Geo. C. Boldt, Pres.

New York May 29 1901 ✓

The 2nd of March 1844
 Dear Mother
 I have been thinking of you
 very much lately and wondering
 how you are getting on.
 I am well at present and
 hope these few lines will find
 you the same. I have been
 very busy lately with my
 school and have not had time
 to write you more often.
 I am sure you will be
 glad to hear from me.
 I am your affectionate son,
 John Smith

My dear Mr. [unclear]
I have your letter of the 12th and
am glad to hear you are
well. I am well at present
and hope these few lines
will find you the same.

I have been thinking
much of late of the
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

The [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear]

It has been a long time
since I have heard from
you. I hope you are
well and happy. I am
well and hope these few
lines will find you the same.

Yours truly,
[unclear]
[unclear]

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA



The Waldorf-Astoria.

Fifth Avenue, 33rd and 34th Streets
and Water Court.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
SAN FRANCISCO

GEO. C. BOLDT, Pres.

New York: June 7 1901

Dear Mr. Schuyler

[illegible]

[Faint handwritten notes, possibly bleed-through from the reverse side of the page.]

75

[illegible][illegible]

NEW YORK CABLE ADDRESS "WALDO"
PHILADELPHIA CABLE ADDRESS "BOLDT"

PHIA



The Waldorf-

Fifth Avenue, 33rd and
and Astor Corer.



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BULLITT BUILDING RESTAURANT,
PHILADELPHIA

GEO. G. BOLDT, PROP.

THE ASTORIA

New York

190

[Faint, mostly illegible handwritten text, likely bleed-through from the reverse side of the page.]

[illegible]

The Malbone Historic
New York.

1.

[illegible]

My dear Mr. [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

The [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

I am [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

Yours [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

Very [unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear] [unclear] [unclear]

The Waldorf-Astoria
New York.

June 10 1900

Dear Mr. Schuyler

My coming out - I have
been a bit down and
you know I
am not feeling
too well. I have everything
thrust on me and I feel
very lonely. I wish
a new acquaintance and
I have been so long
in a family. I am very
oppressed. I am if

They had up to 1000

of the most beautiful flowers

now. A number of very

interesting people

the party.

The work has progressed

well but as I was before

be able to tell it

for the matter you

perhaps of beauty.

I am having some

idea, in fact the work

the value of expression

The two sides of the

other side will be

Yr

I can find nothing in it
to like but the fact that
it says to be superior to
any other is a good thing

Compared to some like
it I have not yet seen
any other of the same
kind in this country

But I am sure I agree
to the fact that it is
a good thing. I am
not sure about the
rest of it. The book
is not very thick as the
mechanical side is to read,
You can imagine how

Dear Sir,
I have the honor to acknowledge
the receipt of your letter of the
10th inst. in relation to the
matter of the ...
and in reply to inform you that
the same has been forwarded to
the proper authorities for their
consideration. I am, Sir,
very respectfully,
Your obedient servant,
J. H. ...

Truly
Yours
The ...
Sincerely,
The ...
Very truly,
The ...

I shall, but I do not
 believe that any one
 has any intention of
 doing anything wrong
 but I am sure that
 in the future we shall
 have our hearts
 that of our love the
 greatest joy for the
 to be the more able to
 the future of our
 our experience, and
 to our hearts I hope
 to connect the two
 for the sake of a
 reason, being an

The Waldorf-Astoria
 New York.

June 11 1910

I am sure that
 the future of our
 our experience, and
 to our hearts I hope
 to connect the two
 for the sake of a
 reason, being an

to you will see that
 and all the things
 that are in the
 of the steamship
 upon the shore between
 the two is connected to the
 of the ship. If any
 things are the ship
 and the things are
 not in the ship
 of the ship. It is a very
 thing. I was standing
 before I hit upon it. We
 had over the compass and
 the ship, the ship.

The Waldorf-Astoria
 New York.

I am sure that
 the ship can feel it. It
 is not a good thing
 in the ship. A large
 pipe leading up to the
 ship is simply
 in the ground. The com-
 munication between the
 ship and the ground is
 a very important thing.

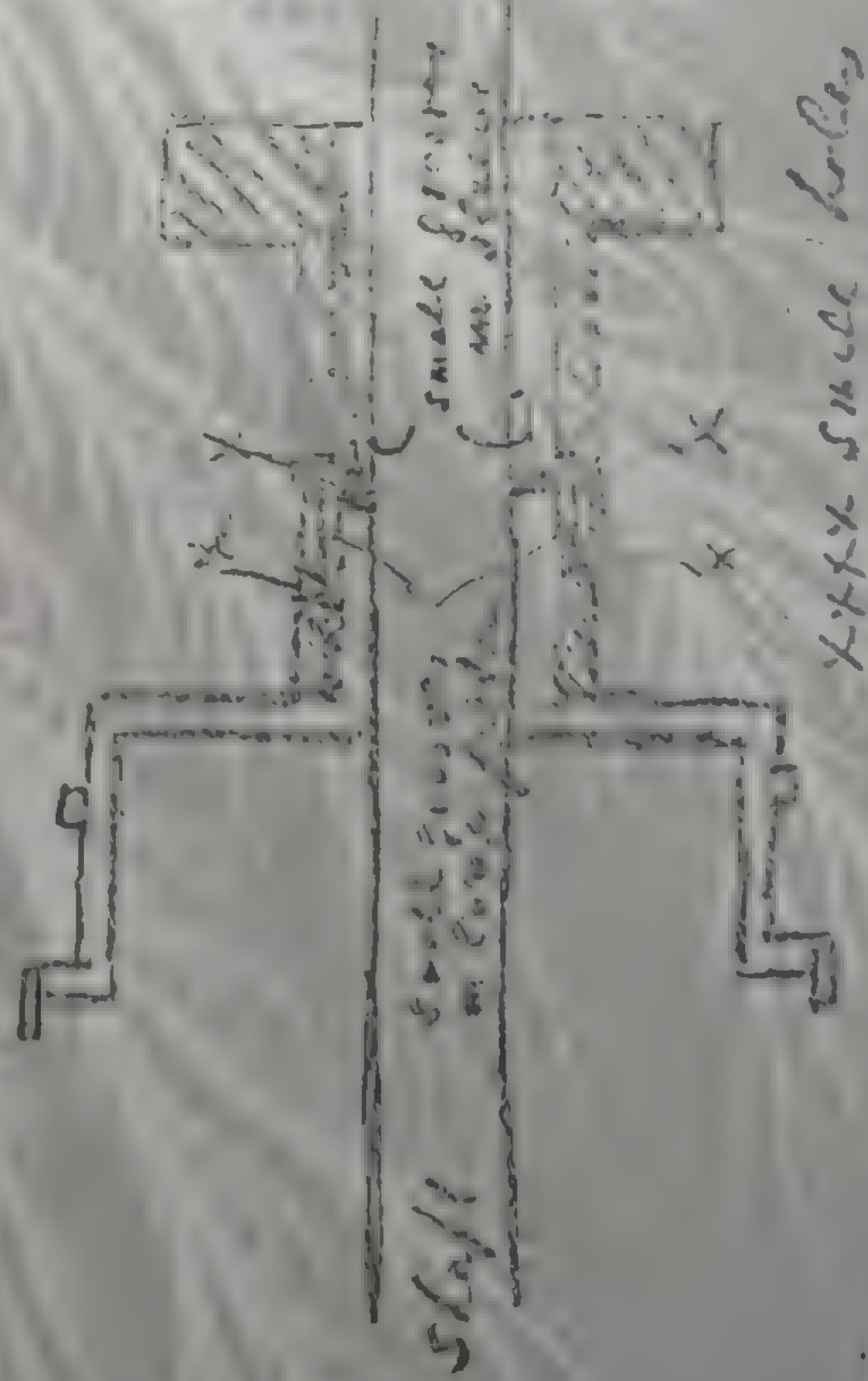
I was a very
 of the ship. I was
 Saturday June 10. Not bad
 I was very happy and

I shall have the
 people have the ship
 to go to the ship. I
 shall go to the ship

The only one I have seen
 is a small one. It is a
 small one. It is a small one.

All the best in my
 wishes for your
 success in your
 new enterprise

I have not yet had the pleasure
 of the opportunity. To give
 you an idea, I have been
 on the 12th of June at the
 bank of the river.



xxx small holes

for the power on exposed
on exposed surface

The Waldorf-Astoria
New York.

January 11, 1900

Dear Mr. [illegible]

Regarding [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The first thing I noticed when I stepped
 out of the plane was the cold. It was a
 sharp contrast to the heat of the desert.
 The snow was deep and soft, like a
 blanket. I had heard that the winter
 was beautiful, but I didn't realize it
 would be so different. The trees were
 covered in white, and the ground was
 a solid mass of snow. It was like a
 new world. I had never seen anything
 like this before. The air was clean and
 fresh. It was a relief after the dry
 heat of the desert. I had heard that
 the winter was the best time to visit.
 Now I knew why. The snow was
 perfect. It was just what I needed.
 I had heard that the winter was the
 best time to visit. Now I knew why.
 The snow was perfect. It was just
 what I needed. I had heard that the
 winter was the best time to visit. Now
 I knew why. The snow was perfect.
 It was just what I needed. I had
 heard that the winter was the best
 time to visit. Now I knew why. The
 snow was perfect. It was just what
 I needed. I had heard that the winter
 was the best time to visit. Now I
 knew why. The snow was perfect. It
 was just what I needed. I had heard
 that the winter was the best time to
 visit. Now I knew why. The snow was
 perfect. It was just what I needed.

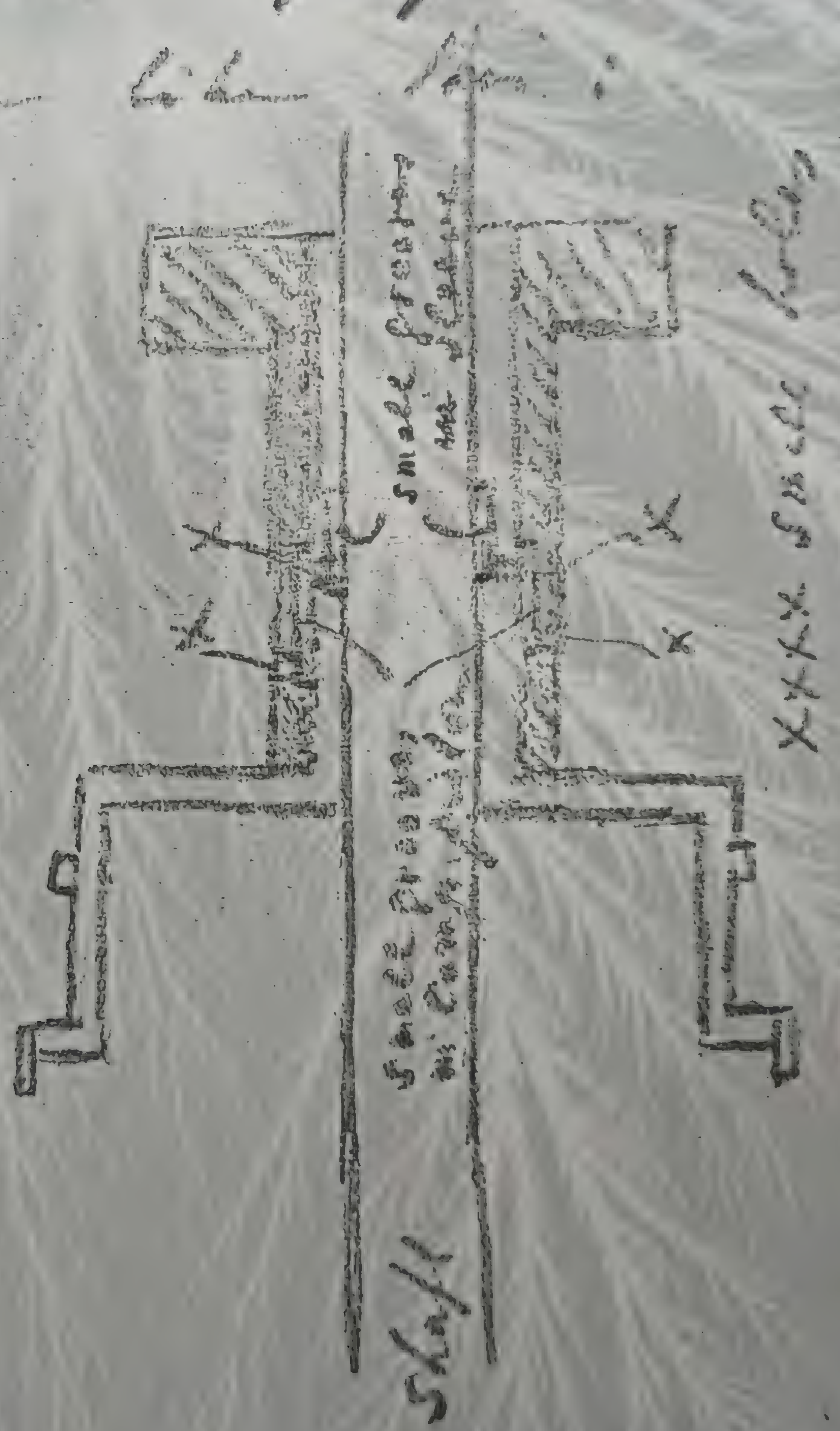
the day before yesterday

The Waldorf-Astoria
New York.

New York.
 Some where through which
 the air can get in. If
 he can not find a reason
 or can not find a large
 pipe leading up to the
 roof or simply lead
 on the ground. The com-
 mon mistake is to say
 something is a reason
 the house can not be pulled.
 I have known the reason
 people have the shape
 of pieces of wood the
 front of the house so that

as my love as mine. The
perfect part of it all
the same. I have saved
myself the trouble of
proceeding blindly without
knowing how much we have
lost. This is a good idea.
I can not believe how we
can find following good work.
All we need is a long
stroke of free power
to make the new system
work. We shall get it.
I am quite pleased in solving
the problem of saving the

From work up the ...
of the ... To give
you an idea, ...
on a ... part of ...
look like ...



Not the power on ...
as reported ...

To you with love from
your mother and father

Children, I hope you are all
well and happy, and I hope
you are all doing well in school.

I hope you are all doing well in school.
I hope you are all doing well in school.
I hope you are all doing well in school.

I hope you are all doing well in school.
I hope you are all doing well in school.
I hope you are all doing well in school.

I hope you are all doing well in school.
I hope you are all doing well in school.
I hope you are all doing well in school.

I hope you are all doing well in school.
I hope you are all doing well in school.
I hope you are all doing well in school.

Spoke The pines are everywhere
and vegetation is plentiful.

The Malboro' Historic
New York.

Aug 15, 1905

The
... ..
... ..
... ..
... ..
... ..
... ..
... ..

I am much obliged to you
for your letter and hope
it will find you well.
I have been very busy lately
and cannot write more than
a few lines at present.

The Waldorf-Astoria
New York.

My dear Mr. [unclear]
I have just received your letter of the 11th inst. and am
glad to hear that you are well. I am
also well and hope this letter finds you
the same. I have been thinking of you
often lately and wondering how you
are getting on. I hope you are
enjoying your life and that all
things are going well with you.
I am, dear sir, very respectfully,
Your obedient servant,
[unclear]

I have the honor to acknowledge the receipt of your
letter of the 11th inst. and am glad to hear that you
are well. I am also well and hope this letter finds you
the same. I have been thinking of you often lately and
wondering how you are getting on. I hope you are
enjoying your life and that all things are going well
with you. I am, dear sir, very respectfully,
Your obedient servant,
[unclear]

The Waldorf-Astoria
New York.

June 22, 1904

My dear Mr. Seligman,

I have received your letter of the 17th inst.

concerning the "Liquor License" in New York.

I am sorry to hear that the "Liquor License" is not successful.

I have no doubt that the "Liquor License" will be successful in the future.

I am very sorry to hear that the "Liquor License" is not successful.

The Waldorf-Astoria
New York.

[illegible]

The first of these is the
 fact that the soil is
 very fertile and the
 climate is very warm.
 The second is the fact
 that the soil is very
 fertile and the climate
 is very warm. The third
 is the fact that the soil
 is very fertile and the
 climate is very warm.

The Waldorf-Astoria
New York.

No. 1000
 Put up by the County of ...

No. 1000 - 1000 - 1000

2. Small Pellets

Handwritten text, likely a signature or name, appearing as "H. ...".

1890

Chas. M. De Puy

1871

My
dear
Mr. De Puy
I have
just
received
your
letter
of the
10th inst.

and
am
glad
to
hear
of
your
success

SD. I have written to you
before, but I have not
received your answer.
I am sorry to hear
that you are not
well. I hope you
will get better soon.
I am writing to you
to let you know that
I am still here and
well. I am not
in a hurry to see
you, but I do
want to hear from
you. I am not
in a hurry to see
you, but I do
want to hear from
you. I am not
in a hurry to see
you, but I do
want to hear from
you.

The Waldorf-Astoria
New York.

I have the honor

to acknowledge the receipt of

your letter of the 14th inst.

in relation to the matter of

the proposed extension of the

term of the lease of the

premises situated at

the corner of 42nd Street and

the Avenue of the Americas

in the City of New York

and in reply to inform you

that the same

At the same time the
policy of the Government
has been to encourage
the growth of the
industrial system.

The Government has
been very active in
the last 10 years in
I think the I can see
evidence of a
policy of the Government
to encourage the
growth of the
industrial system.
The Government has
been very active in
the last 10 years in
I think the I can see
evidence of a
policy of the Government
to encourage the
growth of the
industrial system.

about 4 ft. The very first of the
Barnes 11. The upper part of the
appears to be a continuation of the

of the Barnes 11. The lower part of the
is a continuation of the Barnes 11.

from the Barnes 11. The lower part of the
is a continuation of the Barnes 11.
The Barnes 11. The lower part of the
is a continuation of the Barnes 11.

The Barnes 11. The lower part of the
is a continuation of the Barnes 11.
The Barnes 11. The lower part of the
is a continuation of the Barnes 11.

Called The north side of the
from the Barnes 11. The lower part of the
is a continuation of the Barnes 11.

My dear Mr. [unclear]
I have just received your letter of the 11th inst. and am
glad to hear that you are well. I am
also well and hope this finds you the same.
I have not much news to write at present.
I am, however, very anxious to hear from you
again. Please write soon. I am,
very truly,
Your friend,
[unclear]

2

for an ~~other~~ at
Bacon Hill I shall
come to do so.

The Waldorf Astoria
New York.

June 23 1901

That was an awful
night for the old
house.

Hoping for the best on this point, ~~Woods~~
the next day ~~the~~ ~~house~~ ~~was~~ ~~all~~
being given to it and ~~all~~
the ~~house~~ ~~was~~ ~~all~~ ~~the~~ ~~house~~

the ~~house~~ ~~was~~ ~~all~~ ~~the~~ ~~house~~
the ~~house~~ ~~was~~ ~~all~~ ~~the~~ ~~house~~
the ~~house~~ ~~was~~ ~~all~~ ~~the~~ ~~house~~
the ~~house~~ ~~was~~ ~~all~~ ~~the~~ ~~house~~

my heart of and my of the world
for these few years. Do not stop
here. I have a better yet to show and
ple! I have in these things you find some
both from the Temple King damaged please
beige. I am preparing everything so
I am sure that you shall see can find
many more than the work
and I am not greatly
by the way. I shall be happy
to see you any day if I am away and
right of near. It is a pleasure. I am
sure that the things you see here
is all that I have.

let of you one of the most
those from 21 years to not stop
a better 21st the shape and
in the third you find some
the paper this damage please
prepare anything or
that you shall we can find
nothing in the work
to pay greatly
can I shall be happy
any if I am away or
ear. If however should
that the you not leave

from me The friends and
Dessie and I have been
some distance

That will be the first time
I have ever been so
happy.

Hoping to hear from you
soon and have a
kind
Love
Mrs. J. W. Smith

The Walder, Germania.

Fifth Avenue, 77th and 78th Streets
and Hotel Com.

4 York Street, New York

in School

some

the

reach

from

That is the

I am called

thinking

the the days of the

very early morning

It is so

the state of

the state of

I have just received your letter of the 11th inst. and am
 glad to hear from you. I am well and hope this letter
 will find you the same. I am not at present in the
 country but I shall be home again in a few days.
 I am very truly
 Yours,
 Wm. Lloyd Garrison

The Walcott-Victoria
New York.

Dear Sir,
I have the honor to acknowledge the receipt of your letter of the 10th inst.

and in reply to inform you that the same has been forwarded to the proper authorities for their consideration. I am, Sir, very respectfully,
Your obedient servant,
J. W. Walcott

Enclosed for you are two copies of a report on the progress of the work of the Department of the Interior, during the year 1880. I am, Sir, very respectfully,
Your obedient servant,
J. W. Walcott

Whealdorf Victoria
New York.

Dear Sir,

I have the honor to

acknowledge the receipt of

your letter of the 10th inst.

and in reply to inform you

that the same has been

forwarded to the proper

authorities for their

consideration.

I am, Sir, very respectfully

Yours, Sir, very respectfully,

Whealdorf Victoria.

Thank you for the letter
you sent me last week
as I feel a little better
from the cold I am
able to go out a little
more but he will have to
be patient. He looks well
as I would like upon him
as a contribution to
of a person as he seems
like by the way. He is
as good as recovered from
the cold.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "HOLOT, PHILADELPHIA"



THE WALDORF

THE WALDORE-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
BLUETT BUILDING RESTAURANT,
PHILADELPHIA

CEO, C. BOLDT, PROP.



THE ASTORIA

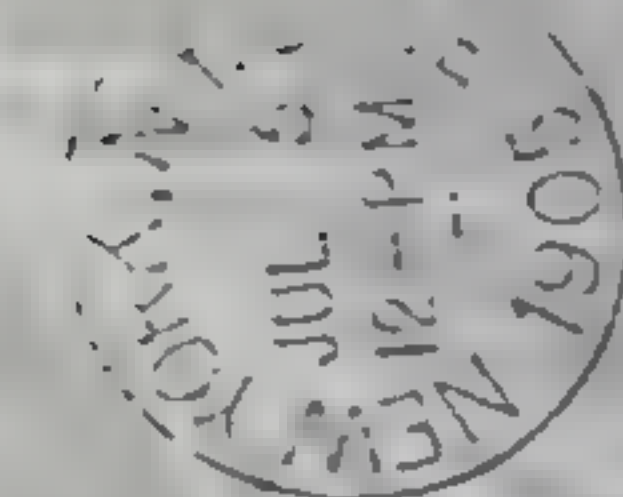
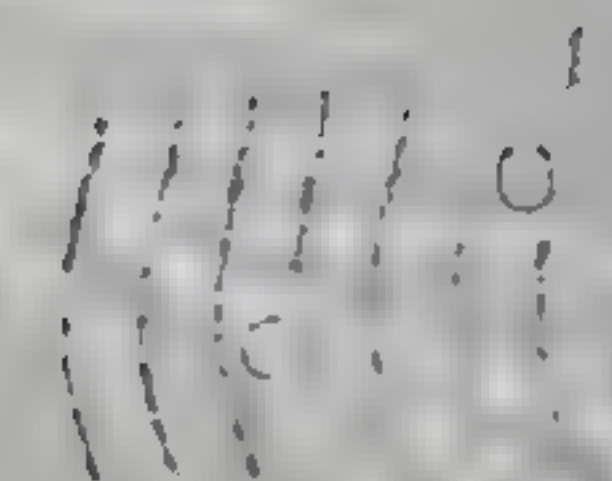
The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Mayor Court,

New York Aug 2 1911

Rev. A. A. Phelps

The Waldo & Historia
New York.



Mr. George T. Schuyler

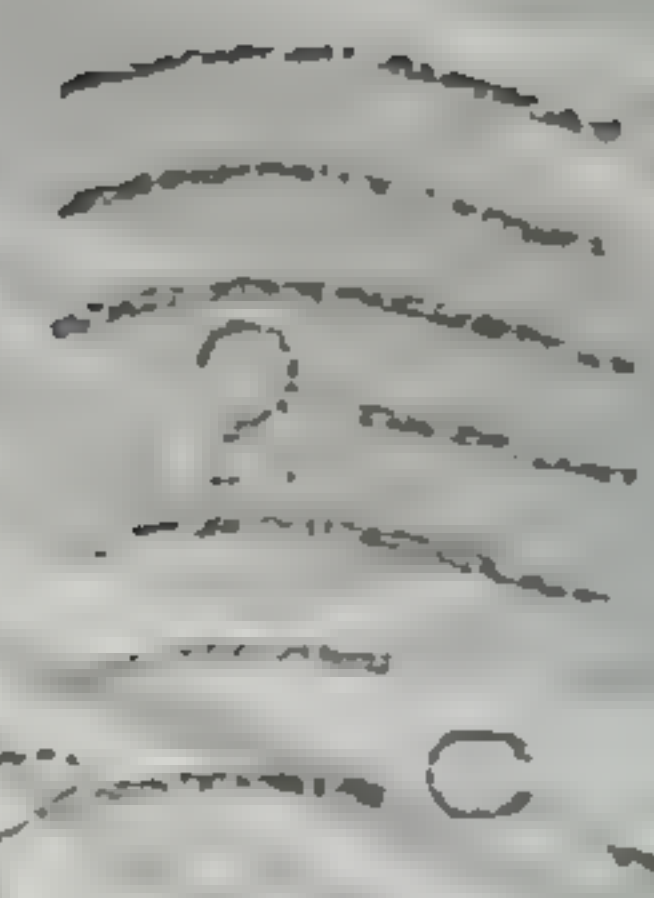
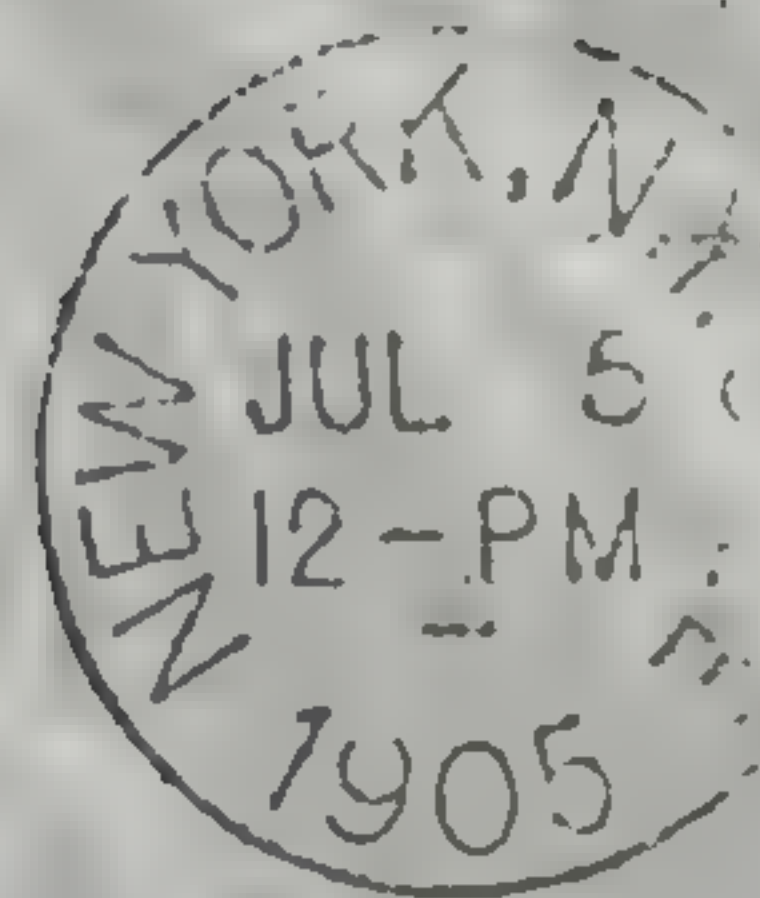
Warden of the
L. J.

1897

Dear Mr. [unclear]

I am very glad to hear
from you and hope you are
well.

Yours
[unclear]



Mr. George Tcherff
Wardenclyffe
L.I.

The Waldorf-Astoria
New York.

July 5, 1901

Mr. B. Schenck

I have been very
much interested in the
history of the Waldorf-Astoria
Hotel. The hotel was
a little over 100 years
old when it was built.

(11)

NEW YORK
JUL 12 1901

See the 2nd volume

2001/1/1

2. *Chrysomelidae*

Doc. 1000

2.



1904

1904

1904

1904

[Faint, mostly illegible handwritten text, possibly bleed-through from the reverse side of the page.]

The Waldorf-Astoria
New York.

Aug 10 1900

Dear Mr. Schuyler

I wrote you a
note a long time
ago asking Peter

to send me
a copy of the
book

It is a very
interesting book

The Waldorf-Astoria
New York.

Aug 5 1915

Dear Dr. Schmitt

I enclose you a
note in having the
house is asking Peter

to deliver a lecture

when you are in

St. Louis

It is important to

have the lecture there

The upper portion of the
 body is represented by
 the upper part of the
 to the center of the
 character. The lower
 portion of the body is
 the lower portion of the
 considered above the
 the center of the body.
 It is to the upper
 portion of the body.
 The lower portion of the
 body is the lower
 portion of the body.

The first time I have
seen the true color of
the situation
I have no doubt that
you if you take what
the paper says
will be able to see
the matter. You should
know I am to have a
copy on the 10th when
I will send the first
in each copy
copy. I am sure
the publication

12

20

2

Dear Sir

I have the pleasure
to inform you that
your order of 1000
has been received.

I enclose herewith
a bill for the same
and a copy of the
invoice. The balance
is due on receipt of
this bill. Please
send me the
amount when
convenient.

Dear Mr. [unclear]
[unclear] [unclear] [unclear]
[unclear] [unclear] [unclear]

I am [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]

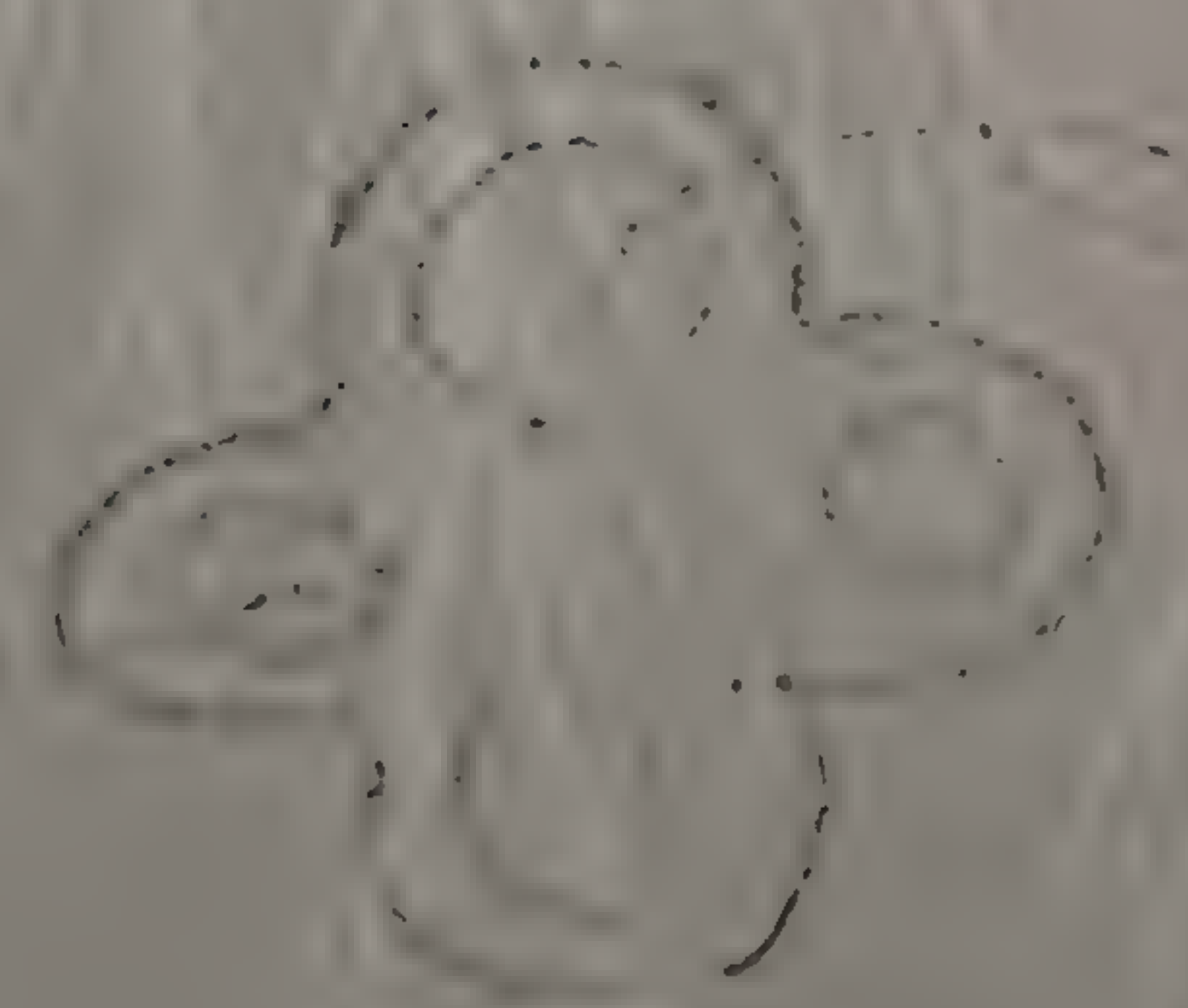
I am [unclear] [unclear] [unclear]

I have [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]
[unclear] [unclear] [unclear] [unclear]



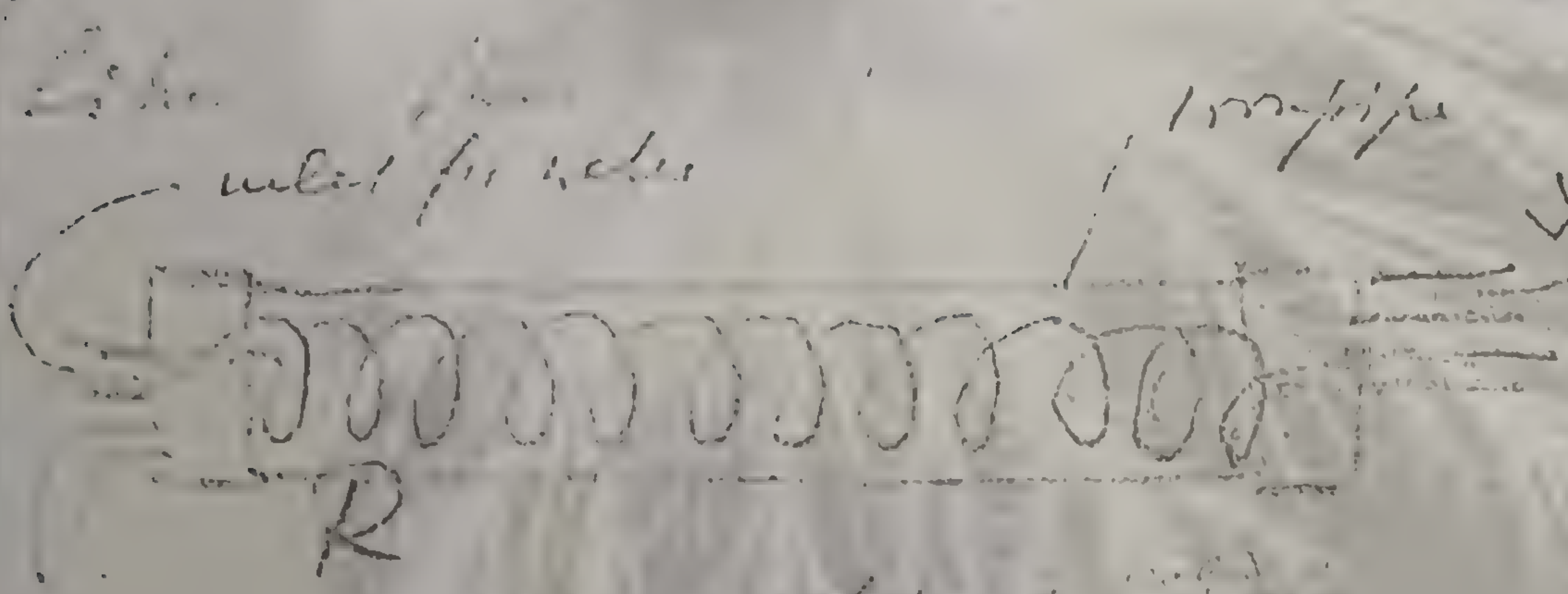
to color the particles
 This color is due to the
 the color above the
 explosion as you know
that that I want you to see
 as to your book I have seen the
 pattern of this film as it is not
 so much showing the
 outlines of the lines
 as the irregularities
 the surface color and
 the color of the
 with the color of the
 particles

The Walcott-Walsh
 New York.



I have seen the
 pattern of this film
 as it is not so much
 showing the outlines
 of the lines as the
 irregularities of the
 surface color and
 the color of the
 particles. I have
 seen the pattern of
 this film as it is not
 so much showing the
 outlines of the lines
 as the irregularities
 of the surface color
 and the color of the
 particles.

the above construction and
 forming an existing reservoir



and water, as the
 first and second
 is so quick that
 there is no time
 for the water to
 be carried out
 of the reservoir, then

could be used for going to the reservoir

In this way as you see
 we can work much more
 effectively. I am solving
 this in three feet if
 we follow up the scheme
 as originally intended. The

existing of the reservoir
 its size, you
 into a series of
 on the same com-
 from Laguna Laguna
 they were organized
 to be an order -
 however in addition

detail, important in the
plan of development:

1) greater performance than other
types of pumps.

2) Improvement of service
made by suction valves.

3) Easy regulation of
flowing of the pressure.

4) Adjustment of the pressure
through the suction.

The bottom of the suction

valves, being adjusted on

top of them the suction

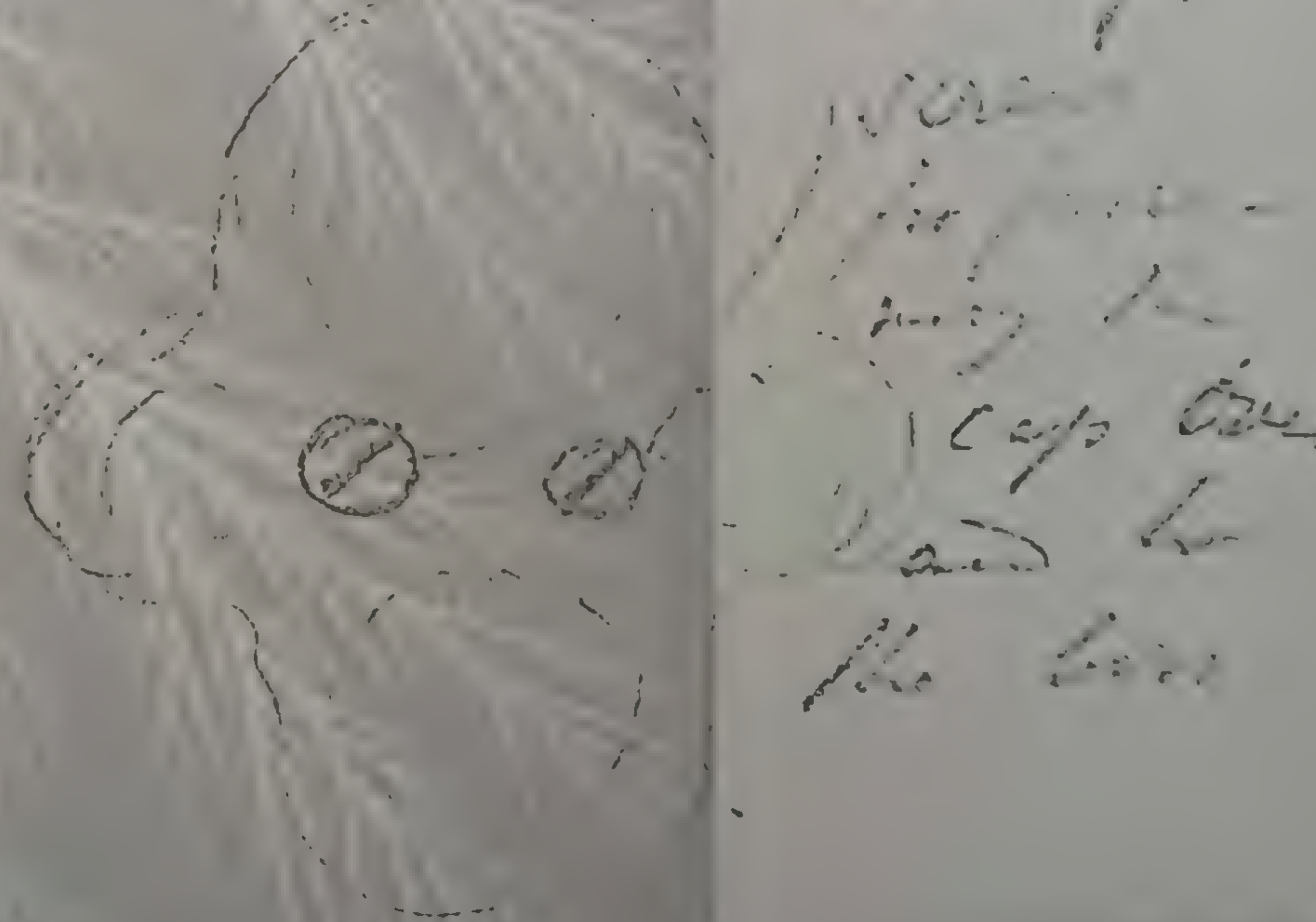
of the outlet.

As you will see the

cap will be positively

The Walcott Astoria
New York.

I shall be able
to tell you the
details of the
valves which will be
the same as the
screws with
the same
valves. The
valves are
like the
screws.



The cap
is positively
secured by the
cap screw
and the
the cap

The two front corners
the composition will be
connected with caps on
the corners. The caps
being hollow the air
from the composition jacket
will be able to pass
through the hollow tubes and
the valves.

The boxes on the back
board the water will be
left as they are and
in each of them the
pipe will be connected
all these four pipes

will be if necessary
united, and will connect
in the cooling chamber R
at X to the steam from cond
and coming in through
Y and deliver it into
the expansion tank
from there through the
valves into the cylinders
from where it will be
exhausted into the condenser
in the
corner of the engine room.
Advantages of very practical

As I have the opportunity.

[illegible]

The Walbort-Historia
New York.

[illegible]

I think the engine is
overheating. I think a
better working of the
suction valves for you
will see that when
one valve is open the
other is closing. They will then
aid each other. If a
little air escapes from
the closing valve it
will help to open the
other valve. I think
the air will go out.

It is from the
the air being for
the paper being the
the air the
the air the
large air the
the air the
to the inlet of air
This is not much of
a job. The air will
be the same
the paper for the reason
the air is the
the air is the

The Standard Medical
New York.

from which appeared to me. I have been
told of the appearance of the bones at
the point where the bones were found. The
on that side. It would seem to be a
perhaps be better to try get the bones
out of the ground. I am not sure I want
to if we can manage to get them to get
out of the ground.

It is very likely that everything
will be found. I shall have
a few more. The bones are all
for right from the same place.
I have been told that the bones are
found in the same place. I have been
told that the bones are found in the same
place. I have been told that the bones are
found in the same place. I have been told
that the bones are found in the same place.

The Harbor-History
New-York.

July 1901-

Dear J. Scherff,

Please Love the
little one.

[Faint handwritten notes:]

They were in the
house at 10:30

[Faint handwritten signature]

front if possible which has been slow
to which the a great amount
pieces have been added. As the
Have not everything in one place
lifted off a ground better. I expect
I shall have the same when
the things are there. I shall be
the lower way off safe for a good
a balance. The while with some
leaving off the little change in
size as can be seen. The shift I can
make for and still get a large

The Waldorf-Astoria
New York.

July 7, 1901

Dear Dr. Scherff,

Please have the

letter from

myself and company

sent up to

you for review

They would be glad

to hear as soon as

possible

Truly yours
L. M. Scherff

about 4000
the number of
pieces removed from

Have no anything

left off a from

I have been

to things in

the lower way off

at balance. The

leaving the

days we can

take the

which has been
a great success
lunch. As the
evening has been
rather I expect
the weather will
be safe for a good
while. As the same
little changes in
the night I can
get a better

about 1000 feet from
y. corner of the
school.

I do not know what
the reason for the
discovery of the ship
is. It is
likely that the ship
was seen
all night.
I have some photographs
for the day. I hope
to send them
soon.

The Walden-Astoria
New York.

Dear Sir,

I have the pleasure

to inform you

that P. J. Johnson

has been made a member

I can not understand of

you and his name

the position, they

together have been

much like the

from my paper - I am sure I shall be
as happy as I can be - I am sure I shall be
in that state - It would be a great
perhaps they have been - I am sure I shall be
and while I am out, I am sure I shall be
to if we can manage to get them to get
the whole of the - I am sure I shall be
a few days - The whole of the - I shall be
for night from very - I am sure I shall be
troublesome - I am sure I shall be
before that - I am sure I shall be
and a little -

shall it not be so.

I shall be very glad

to see you as soon as possible

and as I feel

very much interested in

the work you are doing

in connection with the

work of the

committee on the

I shall be very glad

to see you as soon as possible

and as I feel

very much interested in

the work you are doing

in connection with the

work of the

committee on the

The Waldorf-Astoria
New York.

Long Island

Dear Mr. [illegible]

I have been to the

Hotel [illegible]

[illegible]

[illegible]

[illegible]

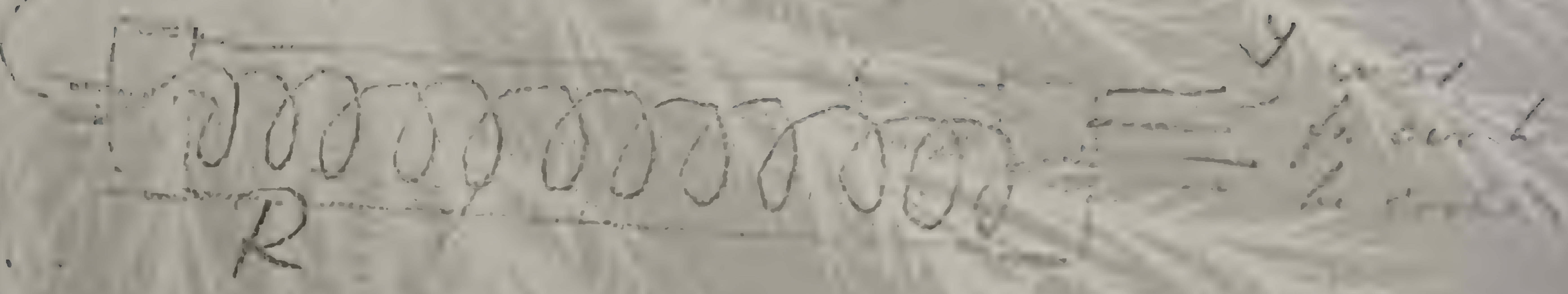
The [illegible]

[illegible]

[illegible]

I have been to the

Underneath and
 forming a cooling system
 like the



could be used for cooling

In this way as you see

we can cool much more

effectively. I am sure

that we shall find it

I
know
type

are both
just down
is so quick that

I ruled them in the
for his to
be written for writing
water, The

nothing of it
congratulation is too good for
its sake. You
will notice this

on the same corner
from Japan Japan
they are connected
to see a better
prospects in the future

value is important in the
plan of development:

1) greater population than
was possible

2) suppression of disease
made by section valves

3) Easy regulation of
flowing of the water

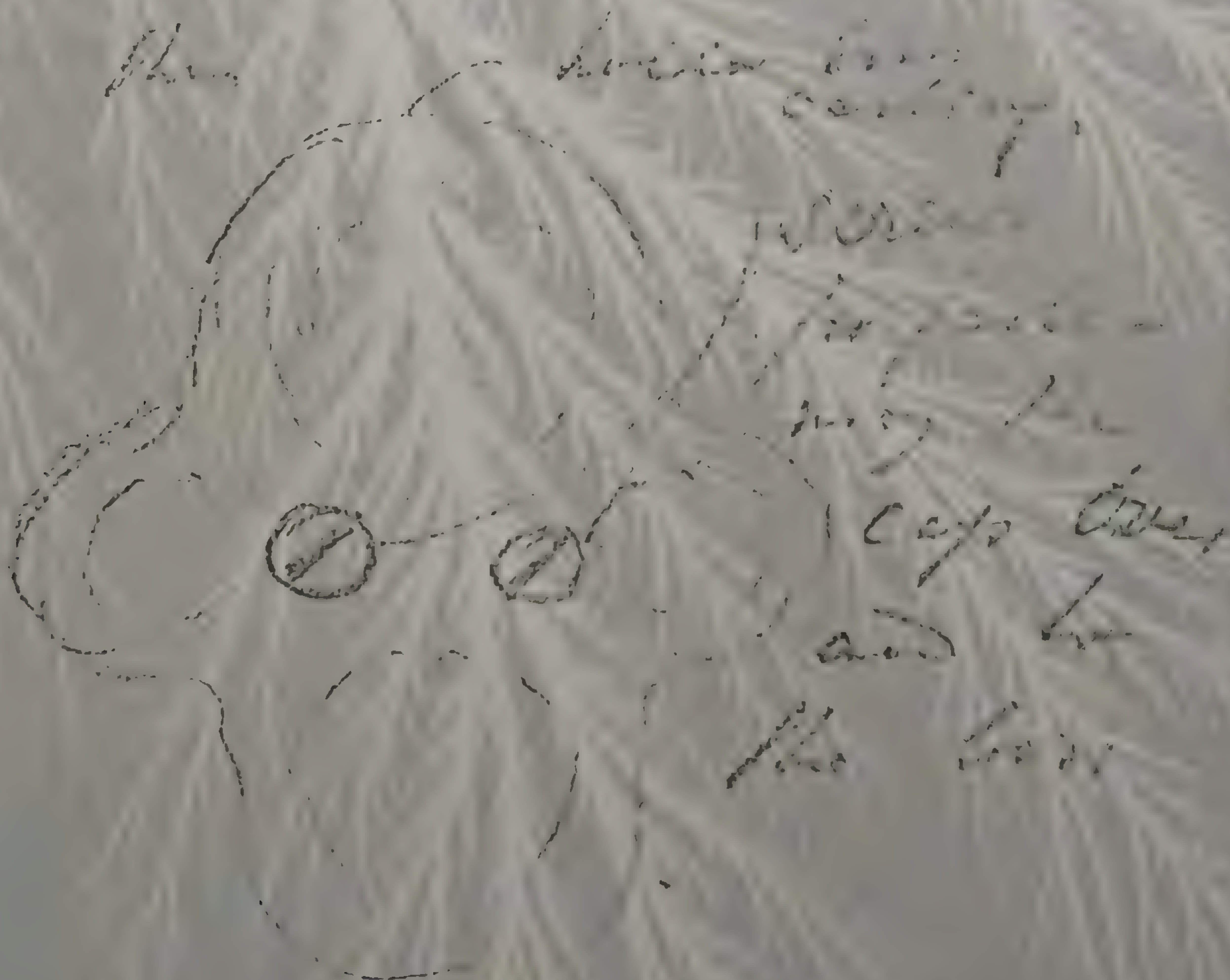
4) Distribution of water
through the branches

The better is the success
valves, thereby allowing on
two of them the location
of the water.

As you will see the
caps will be practically

The Malbone Astoria
New York.

I shall have a small
 hollow in the ceiling
 made which will be
 hollow and screw with
 the screws over the
 holes in the ceiling.



The two front bones
The compound eyes are
located with the eyes on
the head. The eyes
being hollow. The eyes
from the compound eyes
are the compound eyes
though the compound eyes
the eyes.
The bones on the back
head the eyes will be from
left as they are as eyes
in each of them as
the eyes are in the
all the front eyes

will be necessary
to send a will, correct
in the copy of the R
at X to take the
and copy in through
of a distance of
to copy in the
from the through the
when into the cylinders
be from there it will be
as quoted into the Congress
his presence in the
corner of the large room,
Admission of very fresh

[illegible]

The Waldorf-Astoria
New York.

and a number of other
they have secured the
order will have them any
day. We may put a
them packing between the
two and the two they
can. It is not in
the the two cases
a little bit for the
order to get in. It
will cost when delivery
with the one that can
be received. R

The Waldorf-Astoria
New York.

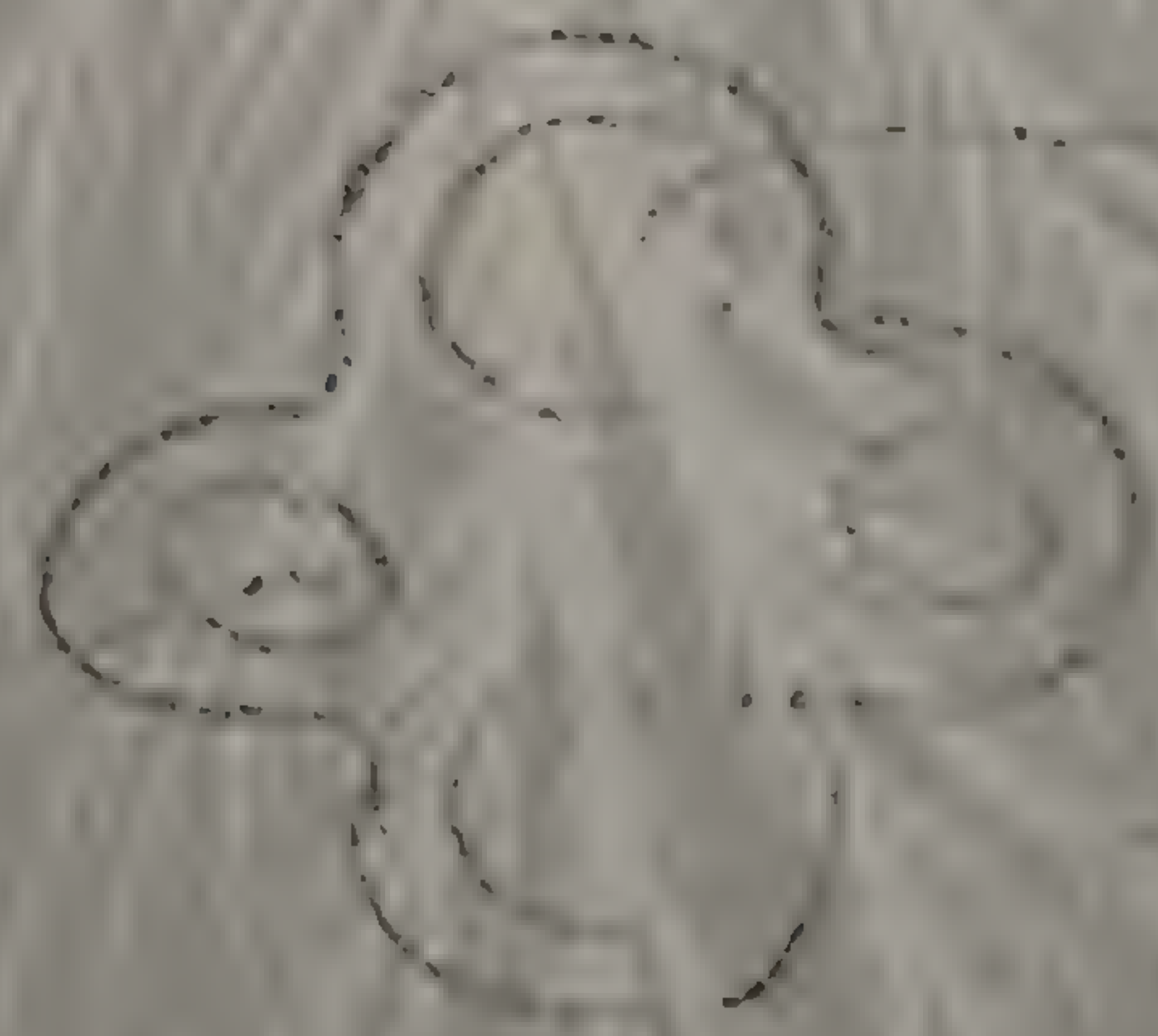
and a party by lunch
but how serious is it.
Cater will have the day
long. We may just as
soon be packing before the
day and the last night
and it will be a
we do not care if
a little bit for the
order and get it. It
will cost the money
with the one last time.
Respectfully R

I have the entire
 collection of the
 letters belonging to the
 Sackin collection for you
 will find that when
 they were sent by the
 post office in 1890
 or from the same source
 closing. They are now
 all back after the
 letters are copies from
 the closing volume at
 the library to give the
 the value of the
 the most valuable

Don't the present bones
show some holes from
 $\frac{1}{2}$ " paper legs, he
can drive them out
and make them as
large as we can be
provided large holes
for him to put my ship
This is not much of
a job. All this work
done to show a
preparation for the museum
since we can put
the preparation in place

to cutting the patches.
This cutting will
be done at the
afternoon as you have
seen that I want you
as to send me a
packet of thin film
as much showing the
surface of the film
in the microscope than
the injection side. I
need it with the
left film.

with holes



when
1st

when
I the



Dear

My

Friend

I am

very

glad

to hear that you

are well

and hope

Yours

BB

1911
R. L. L.

Rev. J. L. L. L. L.
R. L. L. L. L.

My right hand
that by
I suppose
nothing



The Naught Victoria
New York.

Dear Mr. Schuyler

I am a scholar

There are a number
of scholars in the
city. I am not about
my room. I am
going to you in the
very near. I am
very much interested in
the work of the
state and the

Monday after I packed
my first letter with the
same will appear to

the Sunday. To all
please mail it to
the one address of the
the. You can see
when a mistake.

Hope you will enjoy
the first of the
the first of the
the first of the
the first of the
the first of the



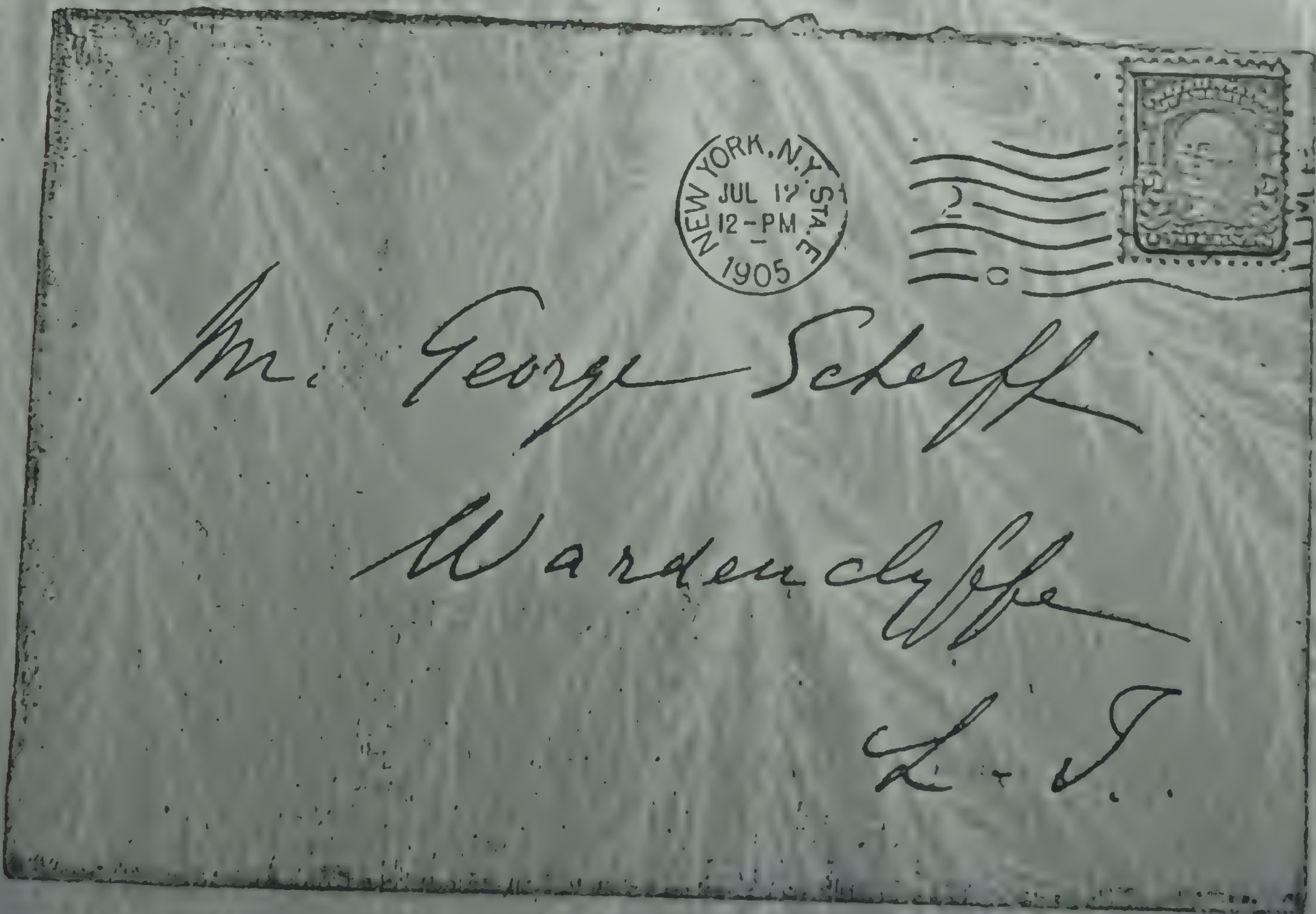
problem to solve. As
 of the kind of is to
 send by Thelma
 published in "Indivi-
 dualism". I am
 afraid it will go
 up in a storm! If
 it should I would be
 very sorry. I am extre-
 mely valuable. In two
 or three years it would
 bring a fortune.
 Will let you know when
 I am coming.
 Sincerely, Arthur

The Waldorf-Astoria
 New York.

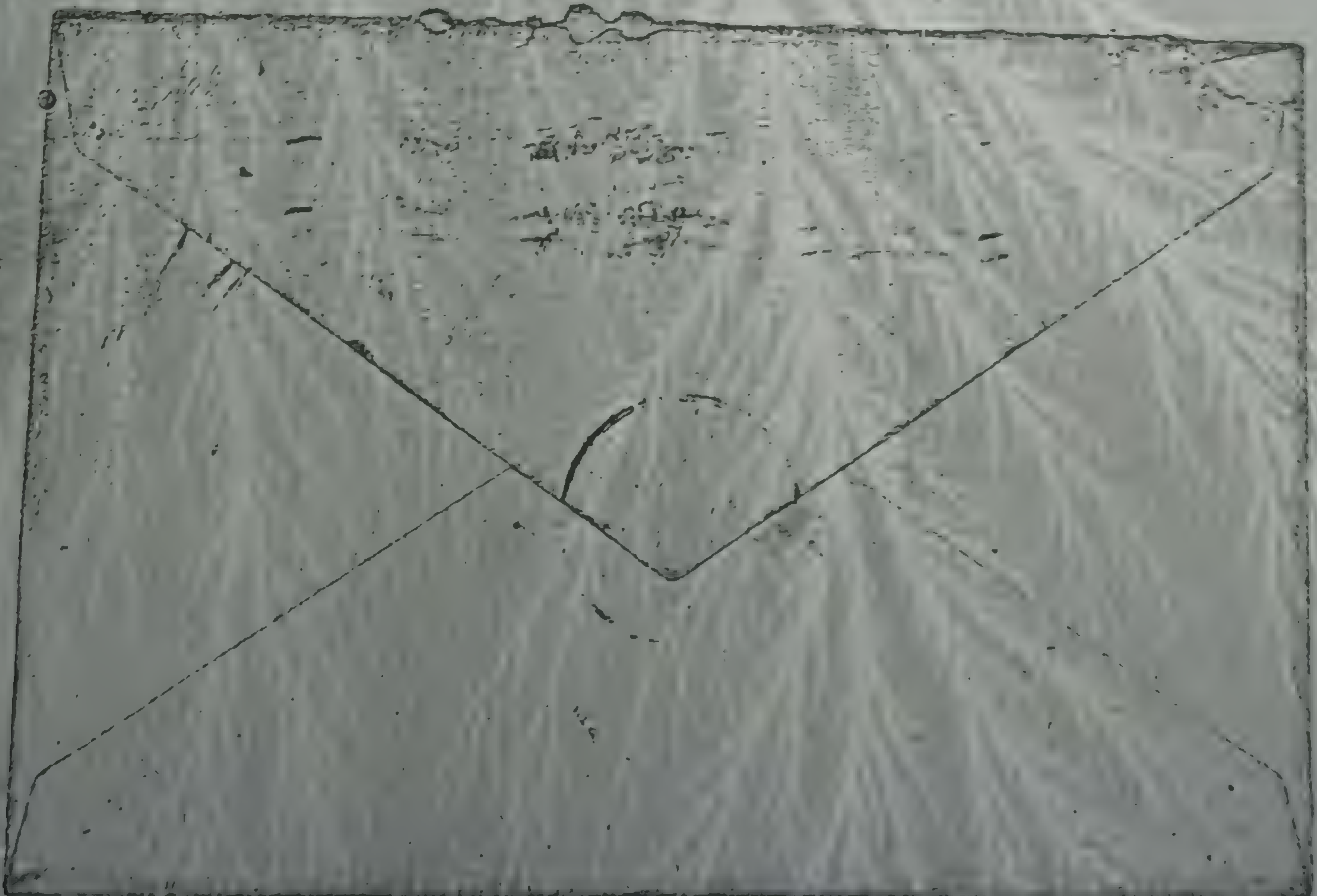
July 12 1901.

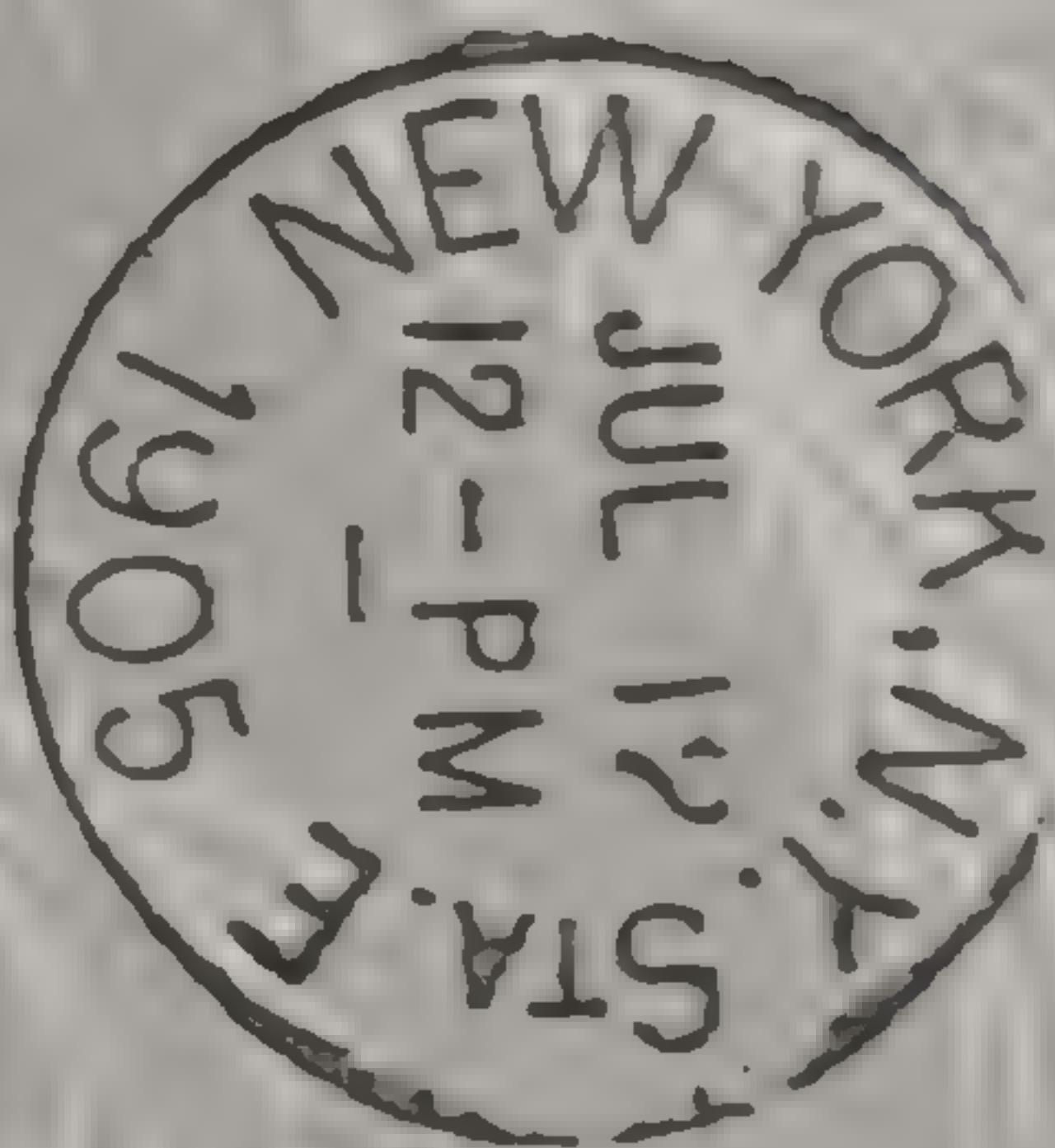
Dear Mr. Scherff,

As I have already told
 you in a previous letter
 mailed this morning, the
 work will not be finished
 before Saturday. At best
 I can begin to take the
 parts out on the after-
 noon train. Should all
 be complete by Friday
 evening I would come



Saturday morning.
The letter when I saw him for the second
to day did not seem if he does not believe
to him the slightest part his present position.
doubt about planning. I have been all in
a small interest. I understand so that we
must so that he can make the best
and in a week, when his party will return
to the city, he would I am expecting each
and then the cheer, but results and I
I believe that in can secretly tell you
the future he will how badly I need them.
from a reliable person I am sure
I have a number of





Mr. George Schuyler

Walden Office

2-5

The Waldorf-Astoria
New York.

July 12 1901.

Dear Mr. Schull,

As I have already told
you in a previous letter
I visited this morning the
work and have finished
before Saturday. As soon
as I can I will take the
train out on the after-
noon train. I have all
the outfit of Bridg
evening I must come

Saturday morning.

The school when I saw

the day did not see

the same the scripture

about about pleasure

a small interest, to

the for that he

and in a week, the

the long and when

the day, the word

the the the other,

I the the in

the the he was

from a reluctant

may
can
seen
leave
may
to
can
as
I
can
for
does
not
take
his
present
position
than
here
all
in
the
week's
time
I
that
we
can
make
the
best
as
quickly
as
possible.
I
am
expecting
excellent
results
and
I
can
secretly
tell
you
how
badly
I
need
them.
Before
I
come
out
I
have
a
number
of

problem to solve. The
of the land is to
be my Thicket
painted on "Indian-
structure". I am
afraid it will go
up in a flash, I
wish I could be
very sorry. I am extre-
mely valuable. I have before
a three years old son I can
bring a fortune.
Will let you know when
I am coming.
Sincerely at York

Dear

As

In
his

work

before

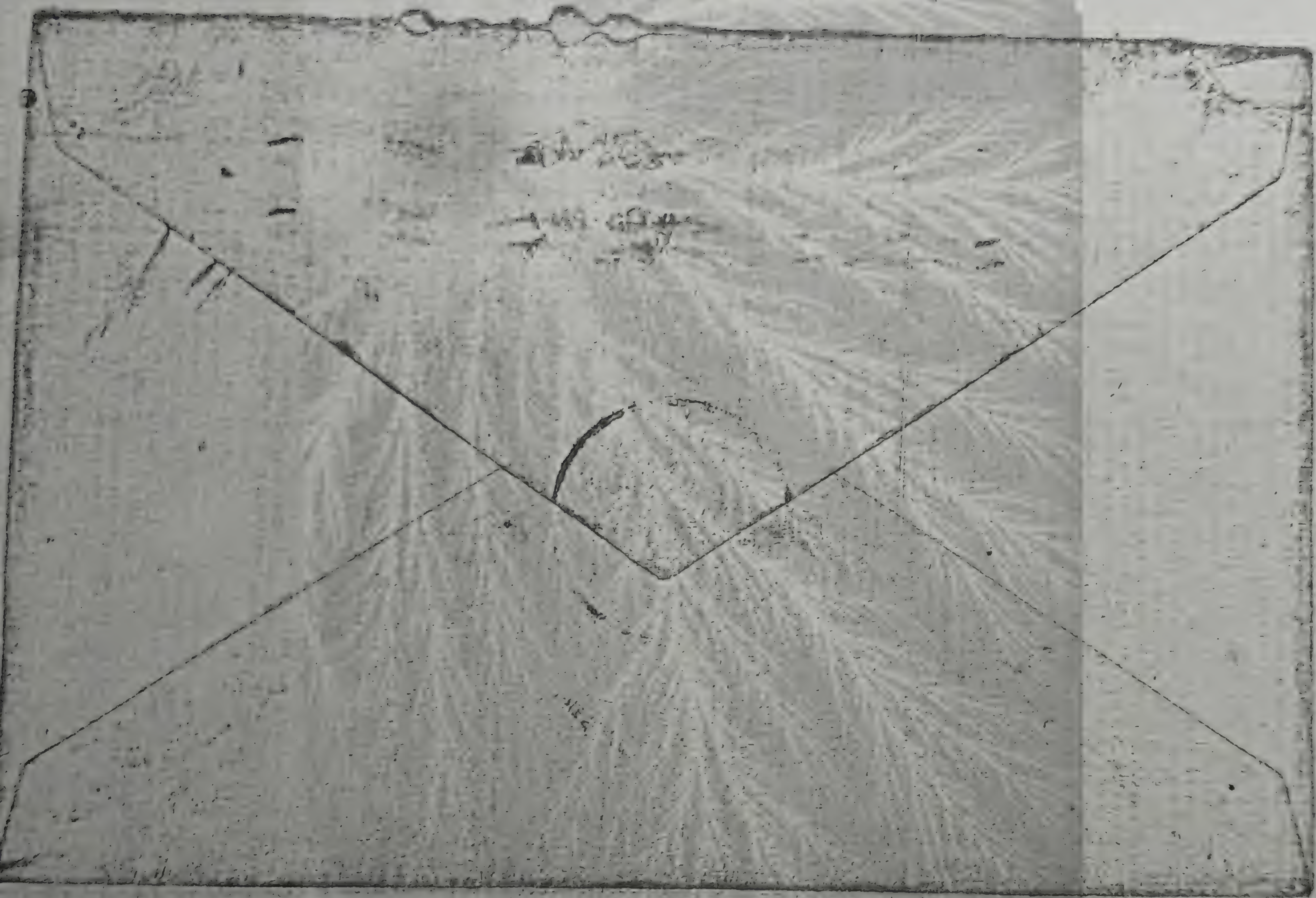
I can

just

don

be

even



one/many people I do not think that
 have to get out tomorrow I can get a piece of paper 2 R L
 Have you succeeded in getting anybody to care the
 press? What about the
 something matter? On
 the top of all my troubles
 are those of Wardencliffe
 are like brights added
 to what I cannot put
 about away
 Do not forget the word
 which will enable us to
 make a quick test.
 The Schenck matter is progressing.
 He may be able to place an
 interest some thought nothing has
 developed as yet. Success at last

P.S. I do not think that
 I can get a piece of paper 2 R L
 Now watch out
 for the 3rd one
 The Waldorf-Astoria seems to
 New York. He is here, too.

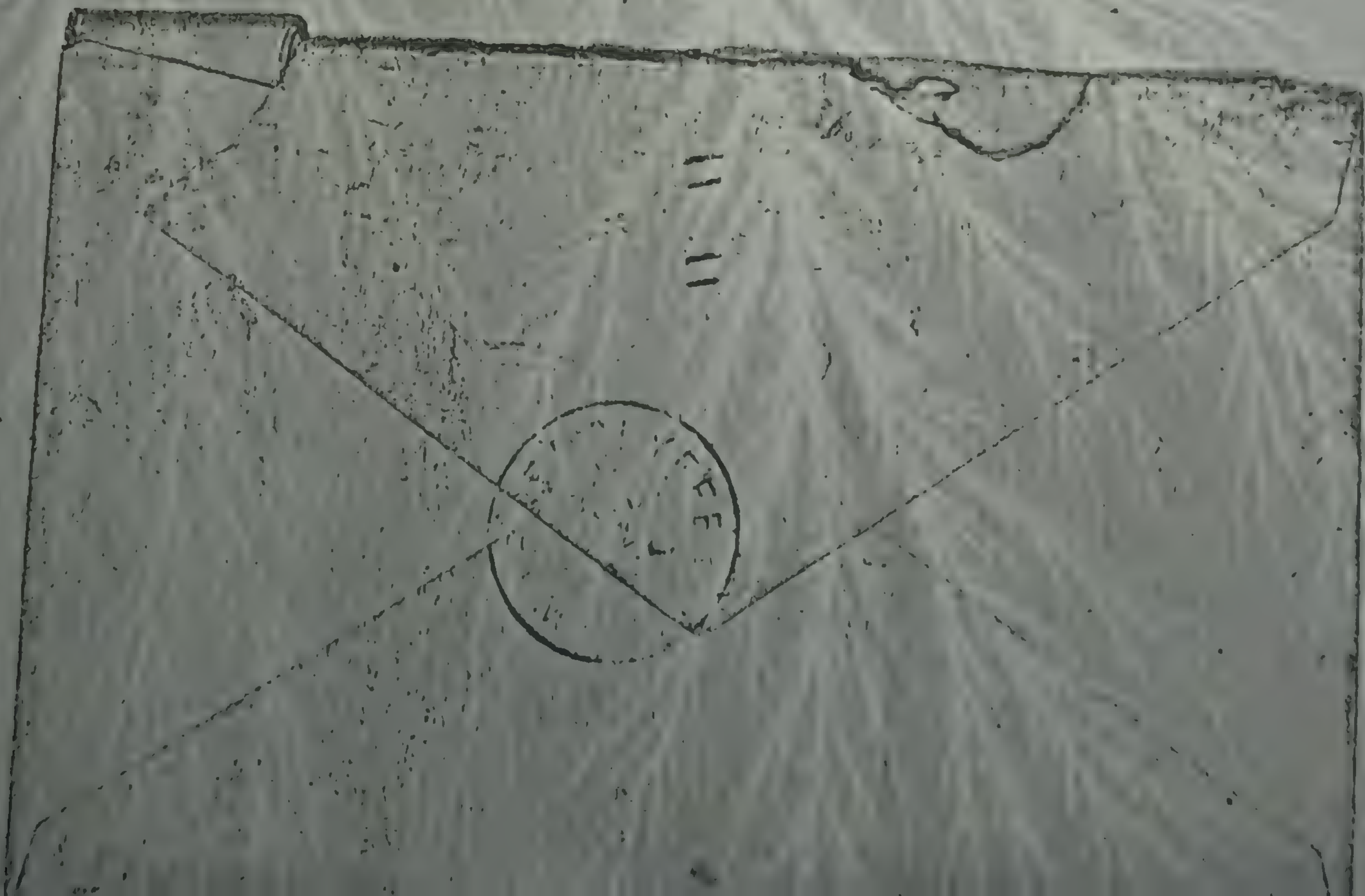
July 12 1905.

Dear Mr. Scherff,
 Note of your letter
 have been received and
 were welcome. I am
 glad you have been able
 to come to a decision
 by not continuing on
 the P. I. matter. As to
 the coal supply we are
 out during the Abderites

NEW YORK, N.Y.
 JUL 12
 2-PM
 1905

Mr. George Scherff
 Wardencliffe
 L. I.

There seems to be nothing else left. You ^{following} contracts the
are doing well. Please people here. I
The dearest piece is an effort we can not
finished yesterday and we expect to have the
are now at the cushion together again
and the drops in the before Saturday. As
I kept. But it will soon as everything is
like more time to finish finished I shall come
see the I thought of one. There is scarcely
first. The values are an advantage to be
being fixed by another account by my coming
than but more than our former but an
has could not have an account of the contract
kept on account of ^{understand} with the



P.S.

I do not think that
I can get a pass from

R.R. Co
Now watch out
the 3rd one.
It seems to
be a dupe sent.

The Waldorf-Astoria
New York.

July 12 1901

Dear Mr. Scheff,

Both of your letters
have been received and
are welcome. I am
glad you have been able
to come to a decision
by understanding

R. P. 9 letter. As to

the coal supply we are

out during the Aldersite

There seems to be
nothing else left. You
are doing well.

The damaged piece is
fixed yesterday and we
are now at the cushion before
and the drop in the
steps. But it will soon
take more time to finish the
see than I thought at
first. The valves are
being fixed by another
man but more than
two weeks have been
spent on account of

to be forming contracts. The
You have people here. I
am afraid we can not
expect to be the
most we must be together again
in the morning before Saturday. As
well soon as everything is
to print finished I shall come
all at once. There is scarcely
an advantage to be
another account of my coming
and some but an
account of the contract
and watch with the

outstanding people I am P.S.
but to get out L-morion. I do not
I can see

Have you secured a fellow
somebody to care the

press? What about the
Rimthor matter? On

Dear

the top of all my troubles
there have of hand made

There

have

new

Plot

to

by

The P.

The con

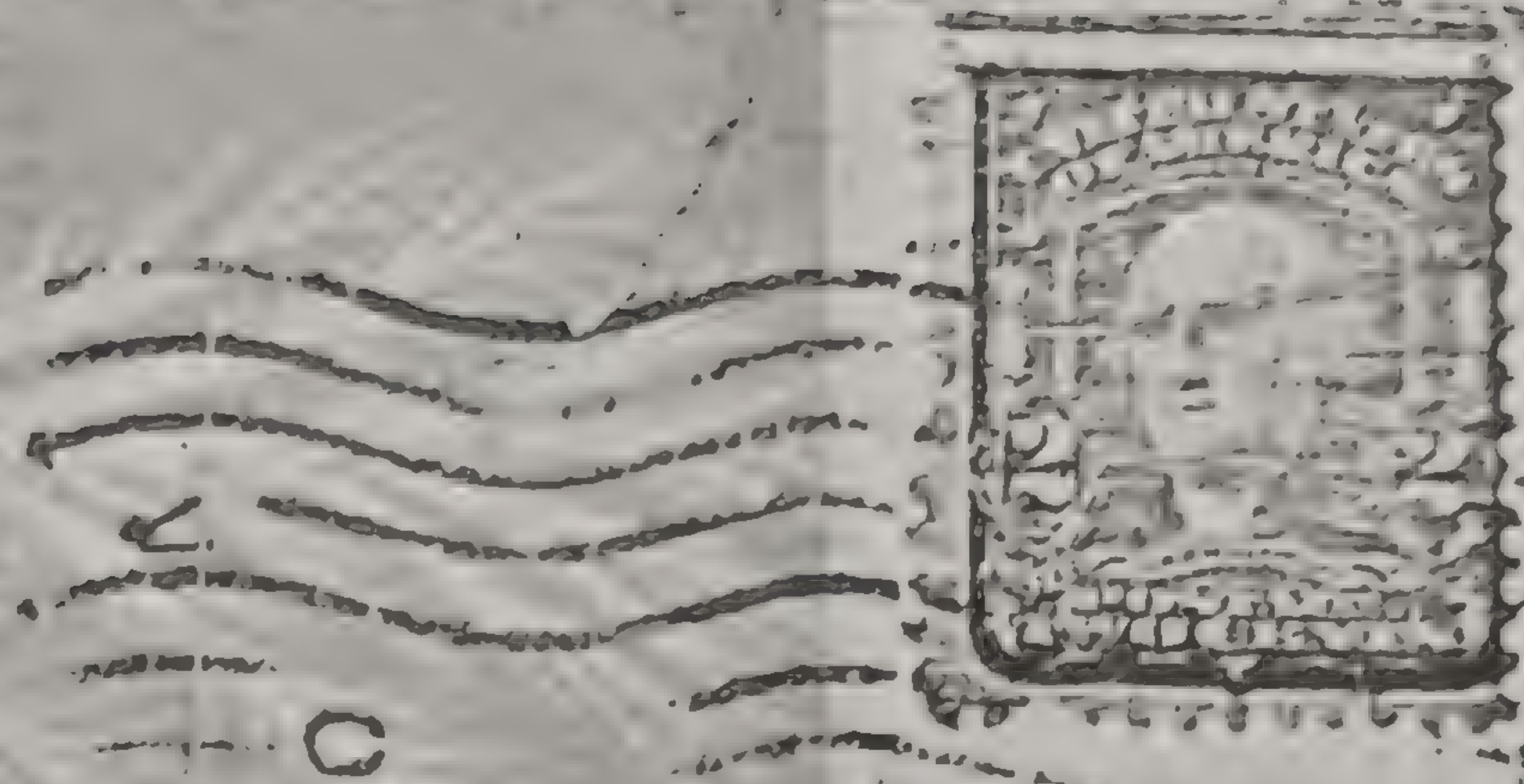
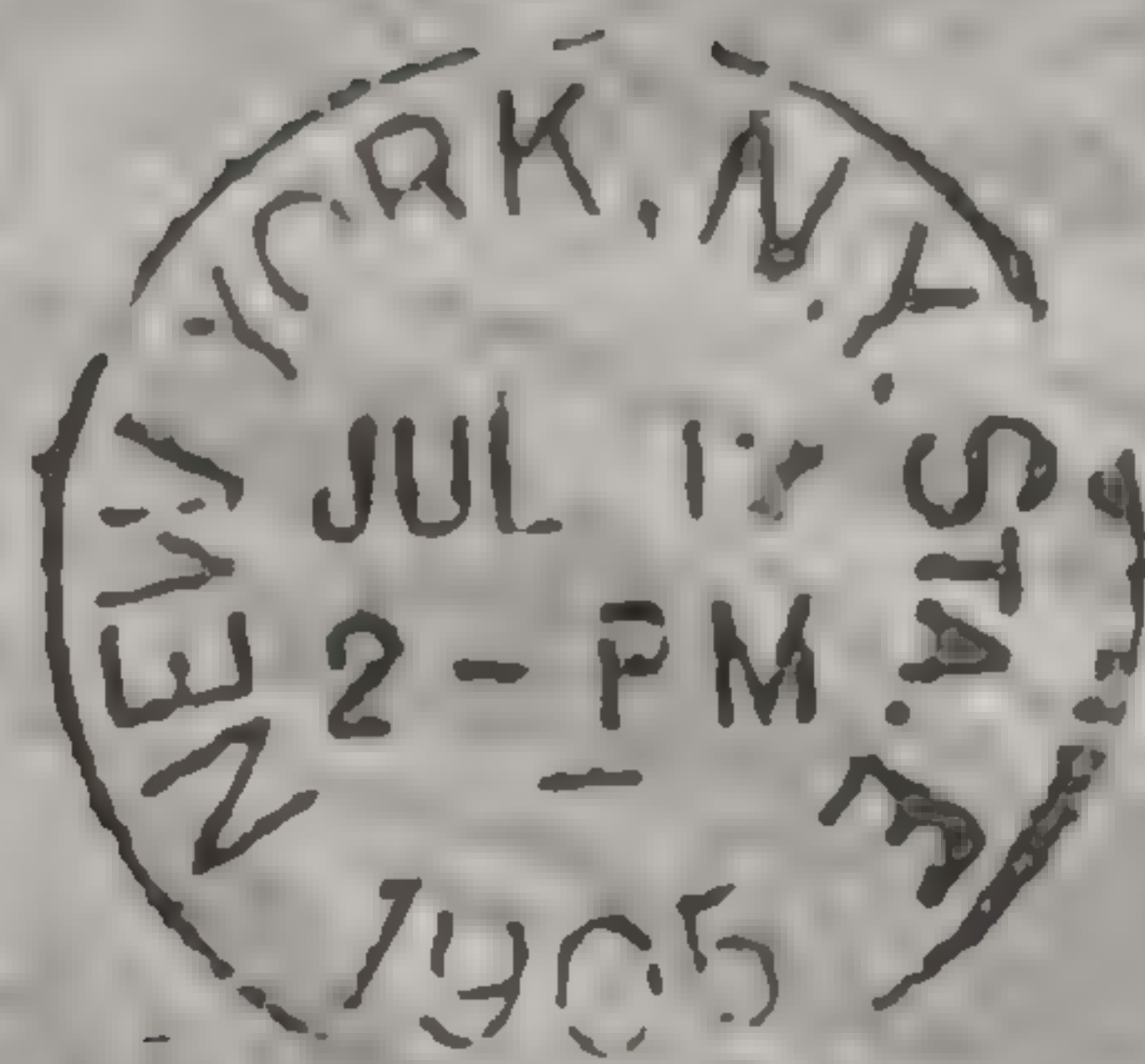
and during

are like weights added
to what I cannot put
about any

Do not forget the word
which will enable us to
make a good deal

The Selton matter is progressing

As they are able to place on the con
struction soon though nothing has not shown
developed as yet. Sincerely and truly



Mr. George Scherff

Wardenclyffe

L. S.



NEW YORK CABLE ADDRESS: WALDORF NEW YORK
PHILADELPHIA CABLE ADDRESS: HOLDT PHILADELPHIA



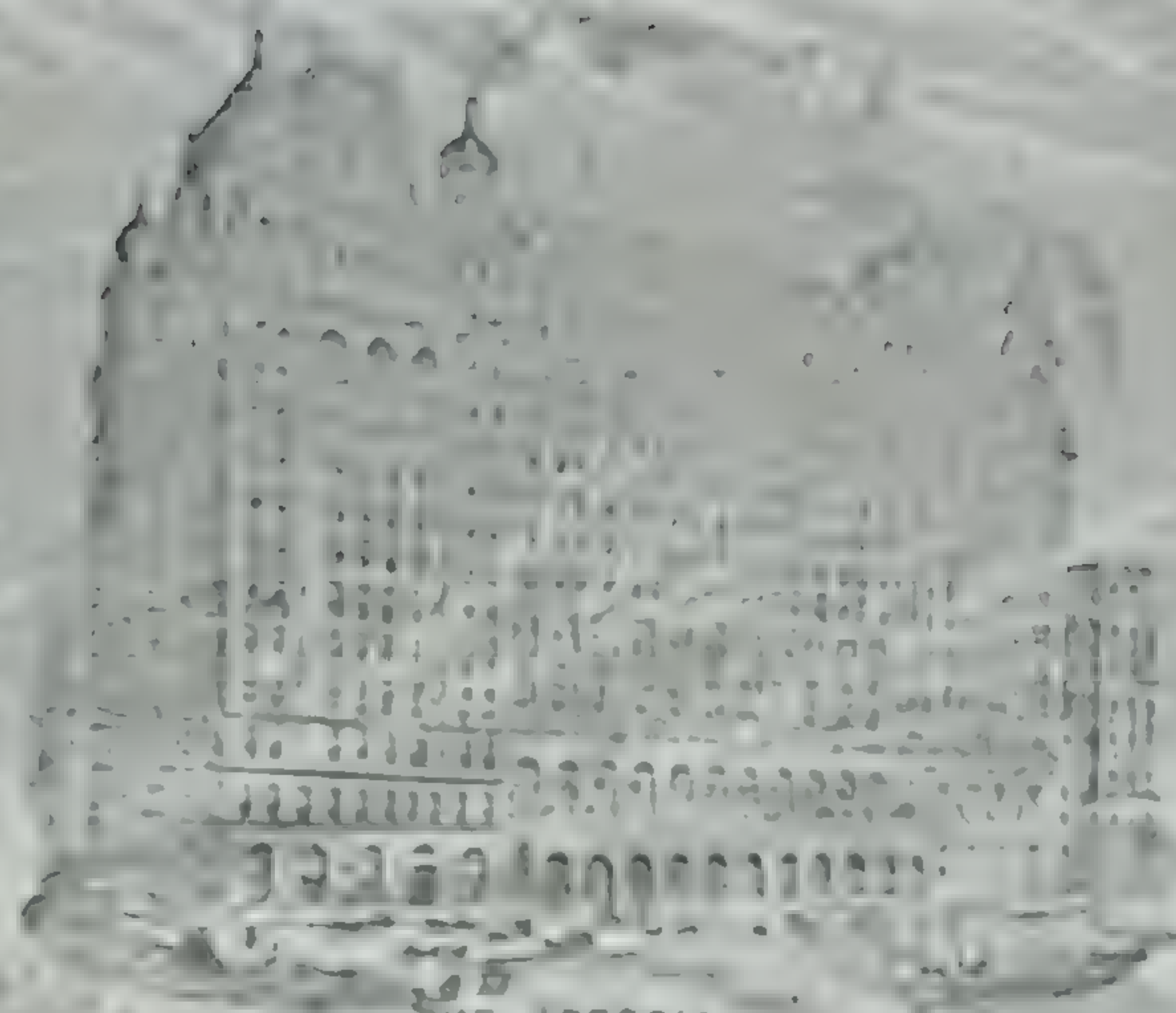
THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT, PHILADELPHIA

CEO. C. HOLDT, PROP.

The Waldorf-Astoria.

Fifth Avenue, 33rd and 34th Streets
and Motor Court,



THE ASTORIA

New York, July 20, 1905

Dear Mr. Schenck,

The valves have just been delivered
to me and I expect to come out to-
morrow to return the day following.
I have ordered 8 extra steel valves with
a little thicker bottom plate as one
of the last was broken. These will be
carried as soon as possible. In the
last order the improvements I explained
to you have been carried out and a
pin has been put through each cap so
that accidents of the kind we have
had since before will not happen again.
The action of the new steel valves seems

to be very good and I hope for much
much better than the last attempt.

Your letter indicates my progress. I am
already beginning to feel the something that
has been there and of course I expect to work.

I will tell you pretty much if looks
better for this situation under the same
and his promise for the 22^d. I
have several chances and many hopes but
I have been disappointed so often that I
am now so far from being sure as I
was when the situation is in a favorable
form my situation will soon up. I
am pretty sure that the result of them
will be quite satisfactory and
the situation must be better.

Sincerely

W. T. C.

scribing ourselves that it
works well. It will be
be necessary to stay up
late. I would prefer to
start a little earlier on
Sunday as keep the machine
running with about 80 lbs
later we can reduce the

~~pressure~~ ~~beginning~~
we find possible.
I anticipate this letter
will reach you at
home to-morrow, so you
will have ample time
to prepare.

Sincerely,
J. T. Clark

BB July 21. 1905.

Dear Mr. Schaff,

I saw Mr. Tolson today
and he impressed me as
considering the interest of
what I spoke to you
already placed. That is
to say he accepts it as
a fact that his friends will
do what he says without
a question. This gives me
much hope that everything

With the situation well known. There
be naturally improved. Now business will be much
This however is not my more reliable as I wrote
only expectation. I have already, as I said like
conferred with Mr. Andrews to have them in the valley
for his coming out Sunday, in place of the old which
I shall myself be there on his arrival at Troy
to-morrow, Saturday evening. There have been some loss
It is impracticable for me to reach in the last day,
to leave in the morning. Please have them at
my end be too long to leave when the train
explains in a letter. But arrives. We have not
one reason I need mention much later as after
him and that is that there is a little bit we can
that nothing will be delivered there the substance and

MS

July 21. 1905.

Dear Mr. Schuff,

I saw Mr. Schuff today
and he represented me as
considering the interest of
what I spoke to you
already placed. That is
to say he accepts it as
a fact that his friends will
do what he says without
a question. This is the
most loyal the card sent

with the collection will
be necessarily improved.
This however is not my
only expectation. I have
conferred with the trustees
for his coming out Sunday. I
shall myself be there and
to-morrow, Saturday evening.
It is impracticable for me
to leave in the morning. Pr
My word to you long to
explain in a letter. But as
one reason I need not
say and that is that the new
steel weather vane be delivered

to be above them. These
new books will be much
more reliable as I note
already, as I would like
to have them in the volume
in place of the old which
are too weak and they
must be in the last part.
Please have them at
seven when the train
arrives. We have any
more books as after
a little while we can
start the machine and

scribing ourselves that it
works well. It will be
be necessary to stay up
late. I would prefer to
start a little earlier on
Sunday and keep the machine
running with about 80 lbs
later we can receive the

~~machine~~
we find possible -
I anticipate this letter
will reach you at
noon tomorrow, so you
will have ample time
to prepare.

Truly
at Test

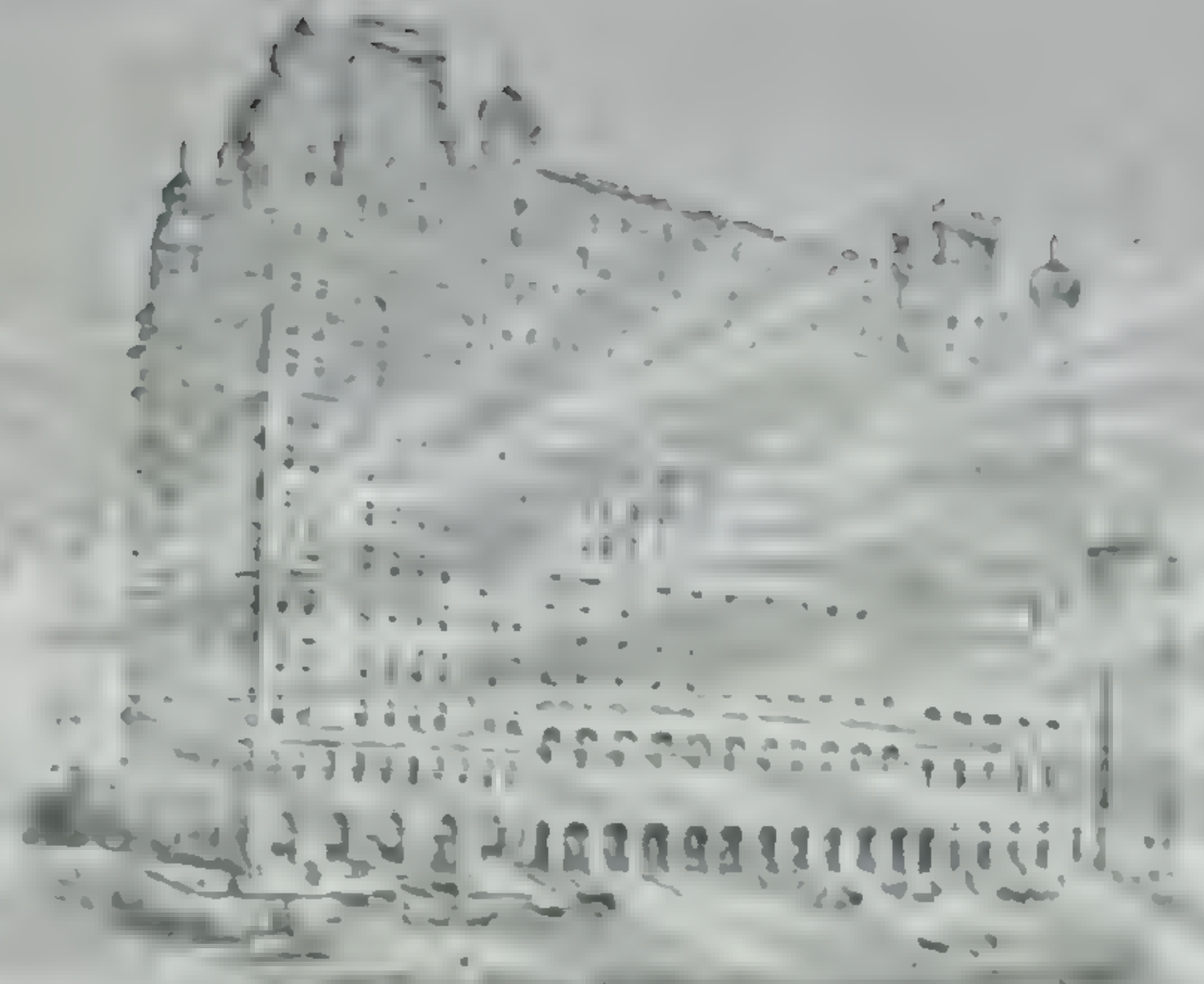
NEW YORK CABLE ADDRESS "WALDORF ASTORIA"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE STRATFORD"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

Dear Mr. Schmitt, New York July 21 1905

I had prepared to take the train this morning but in the last moment several reasons prevented and I decided that it would be preferable to do something here today as time was so short. Mr. Andrews I expect will be here Sunday.

In the first place I wanted to have the photographs with me as I am afraid that the last ones have been very much faded and that the cops are always taking them. I put in one of the plates and broken. The new ones

will be even so much safer than you
I thought that in the end we do not
have any more we might feel along with
the store of commodities of nothing in
that last business evening at the starting
again at say 10 A.M. Sunday.

I let a man by telegraph change of
plan this morning but I thought that
since you proposed in the first letter
to come with your family and not
start the first, as I have seen some
people who have gone of a home. However
you may know them you might fill the
bottle as much as you please down by
working the pump as filling the tanks.
If I can do any financial thing today as
my wife advised me to do on Sunday
I am sorry to hear. I am sorry
to hear of your and wife by heart.

Sincerely

W. T. Miller



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York July 24 1900

Dear Mr. Schaff,

I stopped here - my old residence -
to write a few words which might
go off with the 4 P.M. train.

I've seen Mr. S. and he repeated
what he already said twice, that
he would place an order. He
will see his friend who is com-
ing from at 3 P.M. and
expecting a stronger matter by
tomorrow. I shall certainly be
disappointed if his expectations are
not realized.

Would like much to know how
the sales have behaved. As you
will remember 3, 3, 6, at 2.50
the old collection will be 1/2
if there should be trouble 3/2.

ought to be on them and
rather on the valves, 6 and 7
than on the others because of
the greater stroke. The new wa-
sters have been finished this
morning and on my next trip
I shall bring them out.

I hope that tomorrow will bring
something new at evening.
Also that you will be getting
fewer young men outcours
important just now.

Mr. Andrews has not yet made
connection with his friends, much
to my disappointment. They are
out of town to-day. He even
sent out some paper for direct
connection to the boiler, with a
trap. He thinks we need nothing
but water with the engine, will
dry steam it will work much
better.

I believe now that the
most satisfactory and practical
way would be to use them



E. W. THORNTON
MINISTERS

Astor House

BROADWAY, BARCLAY & VESEY STS.

New York

all your connections and make
expensive joints or some flexible
connections. Note Please send
the two brass connections with all
nuts and washers to Pence on
receipt of this. I shall have them
fixed up and also provide for
regulation so that the piston
will operate properly without
that disagreeable creak. The old
connections will probably will
look much better and simpler
also the noise will be decreased.
I may perhaps make some change
which will save on the
suction opening on the
bottom so as to filter
the air and get the same

have reduced the down motion
the suction valves. The noise
made by them is the principal
nuisance. They have $\frac{1}{16}$ " stroke
whereas the compression valves operate
only $\frac{1}{32}$ "

We must do everything possible to
get the machine in presentable
shape. It seems that not much
is needed now. Only, of course
if something goes very wrong
the steam there will be delay
and trouble. I hope the parts
will submit to the rough treat-
ment for a while. Yesterday I
never heard on the steam pipe
except very late when it had
fallen below normal. I tell you
frankly I was afraid the upper
boiler casting was going to
be a bad place. The vibration seems
to me too intense and I did
not want to risk it and show
that part much more. Will pull
steam if you have had to stand about
4 lines or more. Sincerely, J. T. Taylor

A. W. THURSTON



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York July 24 1900

Dear Mr. Schuff,

I stopped here - my old residence -
to write a few words which might
go off with the 4 P.M. train.

I just saw Mr. S. and he repeated
what he already said twice, that
he would place an address. He
will see his friend who is a
young man at 9 P.M. and
expects to arrange matters by
tomorrow. I shall certainly be
disappointed if his expectations are
not realized.

Would like much to know how
the velvet line behaved. As you
will remember 2, 3, 6, and 7 have
the old steelwork will be all
if there should be trouble at

ought to be on them and
rather on the value and I
than on the other because of
the greater stock. There was
shown here but printed this
morning and on my work top
I shall bring them out.

I hope that tomorrow will bring
something new at. I am
also that you will be
for your smaller endeavors
important just now.

Mr. Andrews has not yet made
connection with his friends. I
am very disappointed they are
out of town to-day. He will
send out some paper for direct
connection to the boiler, also
traps. He thinks he found nothing
but water with the engine, with
dry steam it will not make
better.

I believe now that the
next solid feeling as practical
may now be to use the



Astor House

BROADWAY, BARCLAY & VESEY STS.

New York

all Great Connections and make
expensive joints or some flexible
connections. Note Please send
the two brass connections with all
nuts and washers to Pearce on
receipt of this. I shall have them
fixed up to also provide for
regulation so that the piston
will operate properly without
that disagreeable creak. The old
connections were finished well
but much better and simpler
also the noise will be decreased.
I may perhaps make something
which will save on the
such a opening on the
bottom so as to fill
the air and at the same

line reduce the down motion
the section valves. The down
made by them is the principal
vibration. They have $\frac{1}{16}$ " stroke
whereas the compression valves vibrate
only $\frac{1}{32}$ "

We must do everything possible to
get the mechanism in perfect
shape. It seems that not much
is needed now. Of course
if something goes very under
the steam there will be delay
and trouble. I hope the parts
will submit to the rough treat-
ment for a while. Yesterday I
never found on the steam pipe
except very late when it had
fallen below zero. I tell you
frankly I was afraid the upper
part casting was going to
be a bad place. The vibration seems
to me too intense and I don't
want to be rich and strain
that part much more. Will fall
down if we had had about
4 lines or more. Truly
yours T. A. L.



THE WALDORF

THE WALDORF-ASTORIA HOTEL
HOTEL BUILDING, 35th Street
and Broadway, N.Y.C.
Telephone 1000

W. C. WALDORF, Prop.

The Waldorf-Astoria.

Fifth Avenue 35th and 40th Streets
and Grand Central



New York July 20 1895

Dear Dr. Scherff,

I returned last night with the
cold fully developed as the
your attendance and freedom
troubles and being in my room the
recumbent prolonged convalescence
This morning again my thoughts are
centered on a pressing matter and
I am unable to write you fully as
I expected for the freedom of the
lungs should be taken the matter
of Colorado Springs is a change. Thanks
for the very kind and body that
will be of help in the course

[illegible]

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "ROLDY, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
HOTEL BELLEVUE, PHILADELPHIA.
THE STRATFORD, PHILADELPHIA.
WOLFF BUILDING RESTAURANT, PHILADELPHIA.
C. C. ROLDY, PROP.

The Waldorf-Astoria,
Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York July 24 1905

Dear Mr. Scherff,

I wrote to-day from down town
expecting that my letter would reach
you with this evening train. The
most important thing was to express
the how large Coen Connections will
all supplies to me to Peace.
Please do this without delay so
that we may have them altered as
I propose. The medium will then
make a much better impression.
I have a scheme to take the house
of the section with a little

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BOLDT, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
HOTEL BELLEVUE, PHILADELPHIA
THE STRATFORD, PHILADELPHIA
BULLITT BUILDING RESTAURANT,
PHILADELPHIA

GEO. C. BOLDT, PROP.

The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court,



THE ASTORIA

New York July 25 1905

Dear Mr. Schuyler,

I'm disappointed to hear from you this evening.

Dear Mr. S. this afternoon. He
said he had been delayed and
will return in the morning. Thanks
he will be pleased to see you
at 10 o'clock. That perhaps he may
be in his study. I believe that
he will be a valuable man for me.

I also will be present in
an old acquaintance of mine who

was a very bright and
pleasant season. I was all
the while with the other
people. He can find
interest during his visit. He
will like to see the practice
of a very bright man.

To-morrow I have a business
engagement. I will be at the
law but after L-morrow I may
manage to get out.

One friend J. P. Seale has written
the paper report. I do not know
whether I can appear more often
but will be glad to appear. I shall
I like to have him here in
these times. Sincerely
Yours

He will be in the
see him then yesterday
has to find a room
to living from him, they
other chance of which I
write in good but in
good as yet for by friend
Now is to that Cloud.

Heath you are aware that
the last day is 40 days
for the state of health
then was it published 240
then has to them all things
then which will tell you
the date. If you will
then in word and how then
be Aug 1 or Aug 2. time of T.
Please find shipping and communication of then

P.S. remember that
I was a 216 from 1840. We
thought of the Norfolk Victoria
dead and the New York, the 1st
shown as it appeared July 27/1901.
Somewhere.

Dear Mr Schlegel,

Your letter just

received. I am

very sorry

that I have not

been able to

send you the copy

of the published

document. I am

very sorry

that I have not

been able to

send you the copy

I the next morning
I shall simply return
which will be done
to make better. There
can be no more good
The chief business is
in the afternoon
within the city
jump into the river
a great quantity of
the night in the
unpleasant. That will
your presence in all
the speaker, Liberator
of night in strength
the afternoon
proposition will go
through. Sub

I have been
 yesterday.
 I have
 been, by
 of which I
 but in
 for my friend.
 that could.
 I have that
 40 days
 of publication
 followed 2 y
 have clippings
 will tell you
 I am 22d
 and have been
 by 2. Some of T.
 and correspondents

P.S. I now remember that
 I now remember that
 there is a 2nd floor where I
 stayed at The Waldorf-Astoria
 New York. I may
 return as it appeared
 July 27/1905.
 Dear Dr. Schmitt,
 Your letter just
 received. I have
 been very busy
 since I received it.
 I have been thinking
 that I should start the
 collection. The cages
 have probably been
 the blow.

Joseph A. Schmitt

In the next machine of weight and
be able to construct the
I shall simply value, I think this
which will be even will make com-
a much better. There is an important
can be as much good. The objection to
The chief trouble is the objection to
in the high pressure yesterday
sides, we can get proportion to
jumps into the vacuum for small
a great quantity of the same water
air simply on them at one till 5
concent. That will I very much
from technical in all an Indian belt
the fact, liberal allowance proportion to
through. Sub-

of which is straight
to which is the important
by value, I think this position
be over will be competition
better. There is a important thing.
means good.

In address letter to
yesterday I have made
can say for a while
the reason for small interest. I say
that of the same way to think
on them as one till Saturday.
That will be very much improved
in all and another believe the
level of the proposition will go
through. So on

He also had much to
 say to me yesterday.
 Up to the moment I have
 nothing from him, by
 other chance of which I
 would be glad but am
 not as yet from my friend
 nor as to the clouds.
 Perhaps you are aware that
 the last day is 40 days
 from the date of publication.
 When it is published 2/4
 have two or three clippings
 then which will tell you
 the date. If June 22nd
 then we would not have time
 to say 1 or 2, June 27th.
 Please find clippings and announcements of date.

P.S. I now remember that
 there is a 2" cross in
 front of The Waldorf
 Hotel in New York
 which is a July
 Dear Dr. Schaefer
 Your letter
 received. The
 date is now
 June 27th.
 I have been
 looking for
 the date
 but will
 have probably
 some more

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
 THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Aug 7 1901-

Dear Mr. Schuch,

Up to this moment 9 P.M. I have not yet received your letter telling me of the sum of the order. I suppose it will reach me next morning.

I had the small children brought to me to be said hurriedly a bit of which is a little short. I had a few expressions of interest from them. They will put the small interest in good shape and make a

the Sunday, probably tomorrow. When
it is done I shall be able to show
them how and then we will discuss
the improvements for the manufacturing
part of view. Mr. Novell says I
understand this. I can produce a
better and more cheap. My idea
is to let them have of this improved
type a number on my own account.
We can easily sell a few and then
over the money. I think we ought
to be able to produce a really
satisfactory manufacturing value for
the manufacturing of a great number.
I want to give them an idea of the
large quantities of which I found out
in England. The quantity is also large.
He is now in a small market
being large enough for physical use.
Please let all the things be done there
together. I shall be able to do it.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
 THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

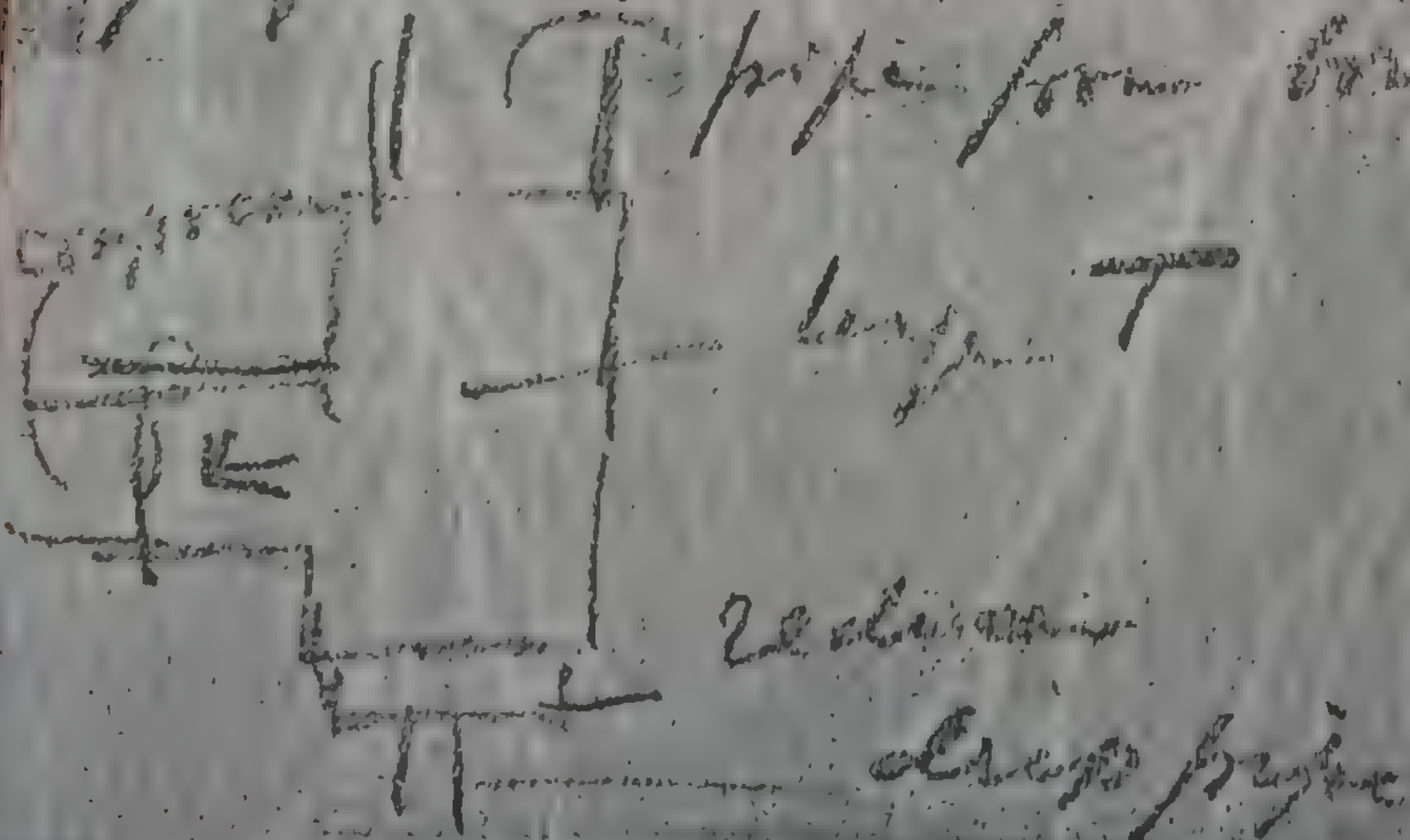
New York

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necessary to him. It is important to
 me. The two sides of the coin
 but one of the same coin.
 Even being that I have done
 a lot of thinking on the new
 values and have gone a step farther.
 Expect to begin work on the new
 tomorrow. I am particularly interested
 to see what the Congress will
 do with this improvement. It
 ought to give us a great deal of surprise.

- trying to get as large as
 possible just for material and the
 product at first popular action.
 It seems to be one thing as
 far as the plan for one one
 As it is now I shall be one
 the day after tomorrow - Wednesday
 the 1st of January up the one of it
 will make a large one here.

Have you seen the water of
 Sunday? Please don't forget the fact for
 water in Scotland? I believe the
 father has plenty of water but
 they are going to make a bladder.
 Do not forget drip on bottom of new
 pipe. I would make it like this



Sunday
 1st Jan

serve to turn on
at start off the steam,
so as to know the
position on the
engine when we
work with the valve
partially opened. The
gauge showed an over-
pressure to the pipe
though a small one
long, probably because
the valve that valve on drop that the way 7-
is leaking.

Sincerely

W. T. Coleman

The Waldorf-Astoria
New York.

Aug. 13. 1905

Dear Mr. Scherff,

Thanking you for the
express note we were
sent this afternoon with
the compress I find
put in the steel-
blades in the valves

The latter could not be spaced between
and properly. Per - the bottoms of the
caps you are not caps 5. Hair studs
capacities with the are greater in the
last modification) instead valves as the
made. In the caps blades are thicker
1, 2, 3, 4 (compression and the stroke longer
valves) the bottom is plain but the valves
turned out a little like out 5 months
while the stud is not.

The caps 5, 6, 7, 8 are properly
not turned out, but we ought to have
the studs belonging to the engine as the
then are. Besides valves which now

The Waldorf-Astoria
New York.

Aug. 13. 1905

Dear Mr. Scherff,

Thanking you for the

express which we received

this afternoon with

the Compressor I find

on drop the the way 3-

put in the steel-

blades in the valves

The latter could not be
all proposed. Per - the bo
haps you are not
acquainted with the caps
last modification) motion
made. In the caps blades
1, 2, 3, 4 (compression) as the
valves. The bottom is plain
turned out a little
while the stud is not.
The caps 5, 6, 7 & are proper
not turned out, but
the studs belonging to a steam
then are. Besides the caps
valves

could not find the space between
the par - the bottoms of the
caps & hair study
with the are greater in the
(cotton) material values as the
the caps blades are thicker
as the stroke larger
is plain than the values
it is not like at 5 months
2 & are proper
but we ought to have
a clear large between
the engine at the
value which now

1
serves to turn on
at that off the steam
so as to know the
position on the
engine when we
look at the valve
partially open. The
gauge shows how
much to the pipe
through a small and
long, probably here
for the valve on drop that the
is leaky.

Samuel

A. T. C.

The
Gen. The
Pumping
experts
then after
the Camp
the
put in
Hides

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

Dear Mr. Schuff,

New York Aug. 15 1905

Nothing developed with Anderson to-day
except that he has four people who
will examine the corporation as to its
standing in relation to the
money necessary. This is all right
for the plan but of course just now.
I hope the two partners, having seen
we bring the machine up to the
applied work.

Sorry to tell you that I had a
bad fall to-day while trying to get

on a machine. I have just
developed. I have just
of the lead. That brings to my mind
the advantage of having a very
portable and reliable
We have looked for a
cool, and by having a very
probably drawn up. That follows
will be the same. I
expect that we will begin
by a house. It will be a fine
this month.

J.D. mentions the most complete silence
have heard nothing from John. Three days
have passed without receiving a disagreeable
letter, it is annoying.

I hope you are doing them all
are. Disappointed not to receive
word this morning.

Yours

H. T. T.

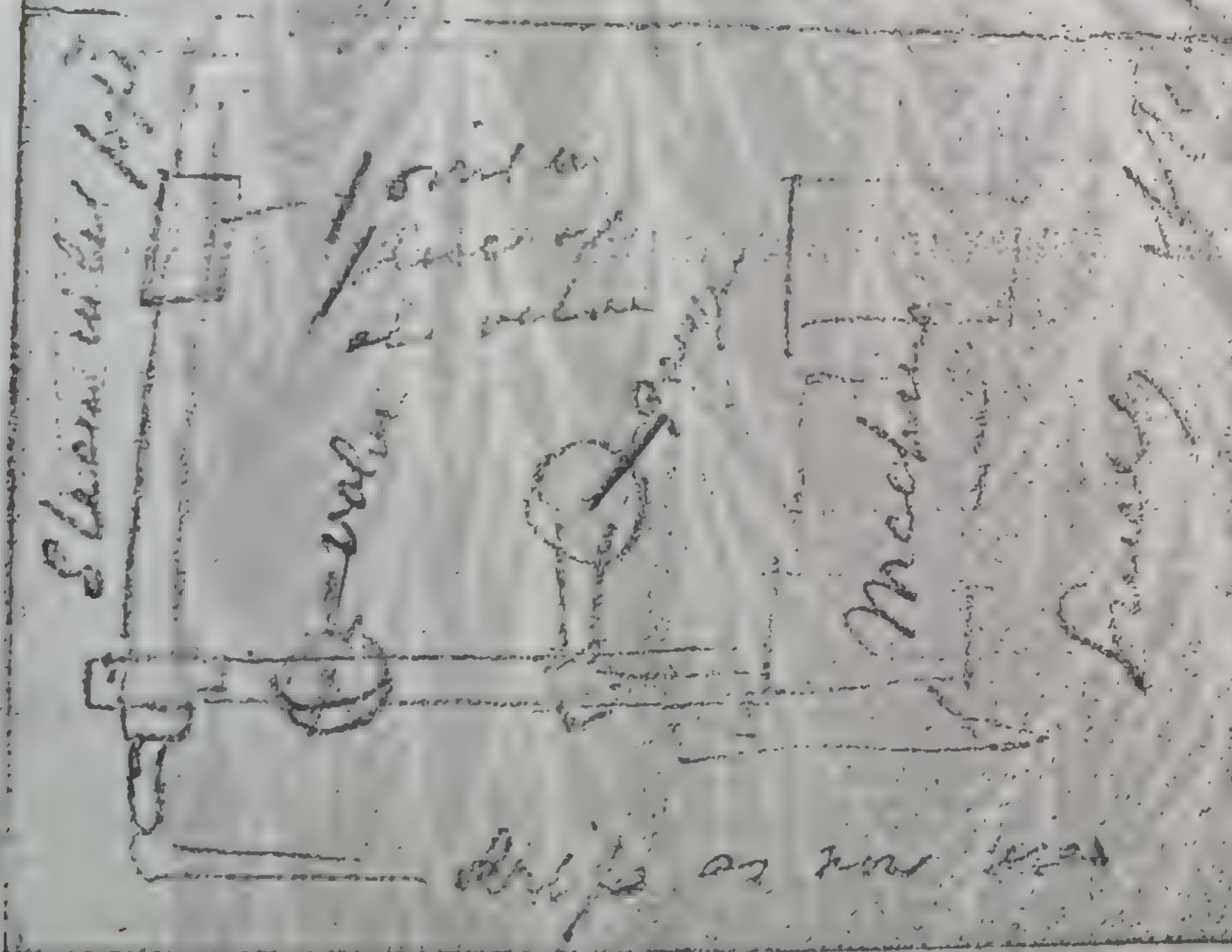
We need a mod-
 color in the engine
 head of the valves
 and gaskets. It will
 be necessary to have a
 piece of metal close
 to the piston.

The Waldorf-Astoria
 New York.

Aug. 16, 1905

Dear Mr. Schaff,

Your letter about
 the oiling of the
 valves is for me
 to be answered
 by Pearson. The
 drawing will be
 ready to show it
 and we begin



The day after. From a long stay
the Thompsons found that they received
of view the superior letter, the same
amount, an amount which indicates the
value. The whole Thompsons for the
organization of the Thompsons will be
found in the Thompsons Thompsons
Thompson and sub Thompsons probably
Thompson. The Thompson by Friday evening.
will also be cheaper Thompsons
Thompson. Troubles before but
Seth will be by the hope of starting
telephone line that a good number of
his party will be then seen smaller.

The Waldorf-Astoria
New York.

Aug. 16, 1901

Dear Mr. Schaff,

Your letter received.
I am sorry to hear

that you are not
able to come to

the hotel. I am
sorry to hear that

you are not
able to come to

the hotel. I am
sorry to hear that

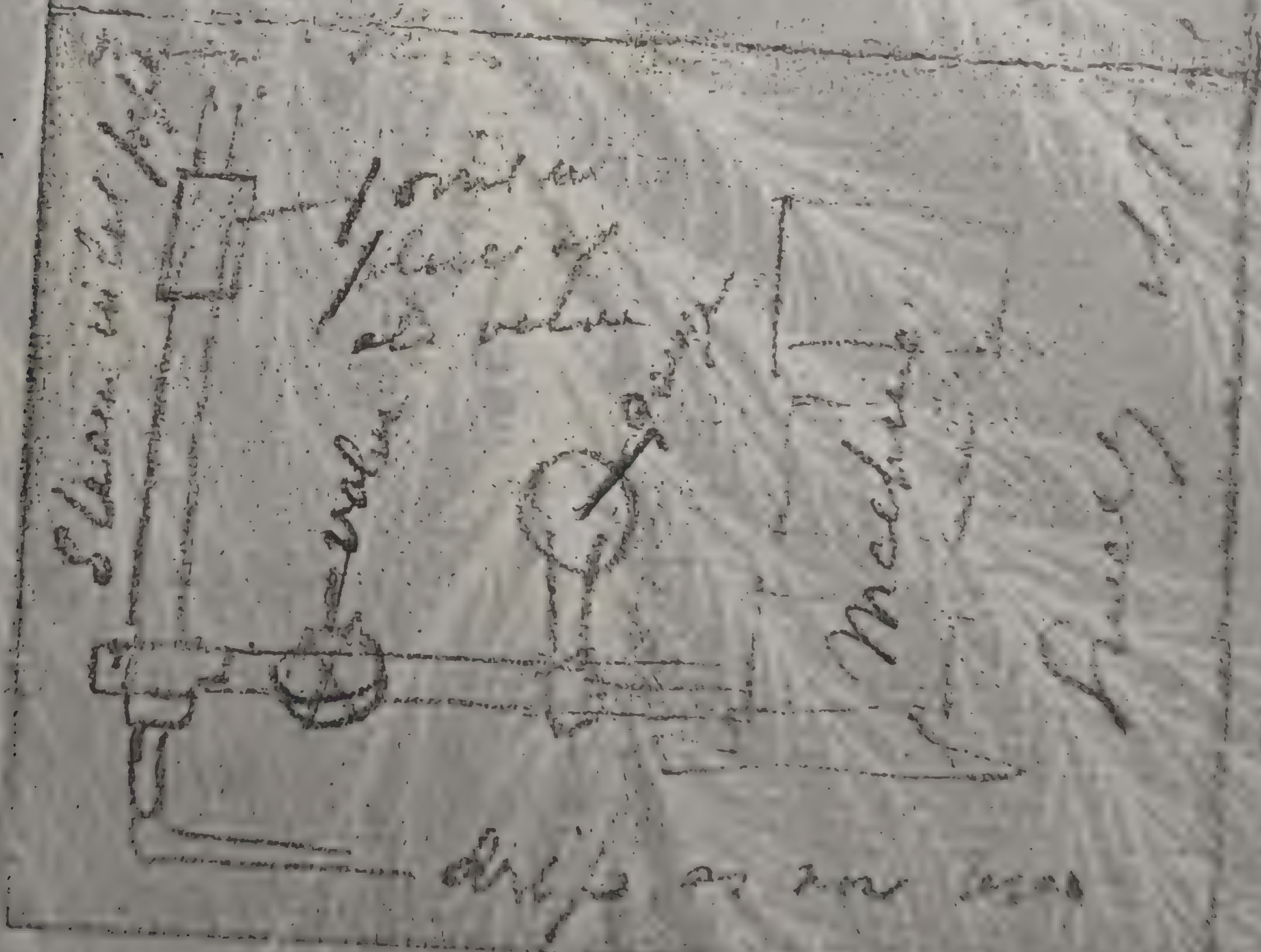
Mackay

Frank

The day after, from
the Mangrove point
of view the improve-
ments are consid-
erable. The whole
of the Mangrove
point is now
practically cleared and sub-
stantiated. The meadow
is also cheaper - by 1
mile. From
seen but not by the
elephant lady that a
his party was here then

After. From in town only last
news from week. Has received
anyone - a letter, he said
consider - which indicates we
shall Town says for the
the Congress will be
ed sub- ready tomorrow, the
the need - ~~have~~ ~~other~~ probably
cheaper - by Friday evening.
no by the hope of starting
dy that a good answer, which
as he then seen matter.

We want a body of
 color in the wrong
 part of the valves
 and gages. It will
 be necessary to have a
 firm conductance
 to the seal.



You
 have
 all
 the
 be
 pe
 draw
 each
 work

delay because
 the value
 of the material
 is low in the
 market with
 a small quantity
 of material
 which is not
 very much
 out of the way.

Truly
 yours
 J. F.

The Waldorf Astoria
 New York.

Aug. 17, 1905

Dear Mr. Scherff,
 We have had some
 of the material
 which is not
 very much
 out of the way.
 The one is
 sufficiently complete
 to make a good steel
 gun and the other
 is a small piece

new will work much better than the old. We should see if
while the work on this end of road near
10th we selected a few more near
port entrance was made. I shall get them
boards getting them. I shall get them
from one place. I shall get them
shape. All details. I shall get them
even settled them. I shall get them
afternoon at work. I shall get them
better from the same. I shall get them
at the same place. I shall get them
begin to-morrow. I shall get them

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The Waldorf-Astoria
New York.

Aug. 17 1905

Dear Mr. Scherff,

We have had some
drawings and the
designs for the
new building. The
one is
sufficiently complete
to make a plan which
you can use for
as a plan for the

new will work well we
better than the old
while the work on this the
100 are released and
good economy was made
before getting the I shall
first one which is the
pages are deleted at copy
have better than the one
often as work on the
better than the last one
at the time was to fit
begin to move so the
and

to read he should see 5
ad. end of next week
on this the en. has not nearly
finished.

our side I shall get the
the two ways known
at present to take
them out Saturday.
It will probably
take a little time
to get the post etc.
so that we shall
not have much

delay
 R
 an
 L
 rise
 a
 7
 they
 our
 Every
 in

NEW YORK: CABLE ADDRESS: "WALDORF NEW YORK"
PHILADELPHIA: CABLE ADDRESS: "WALDORF PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Aug 20 1905

Dear Mr. Schiff,

You must have noticed that this afternoon when we began the experiment with the compressor I first let the drop valve open to blow out all the water and then turned on rather quickly the steam in the mechanism. It started instantly as I expected. I proceeded in this manner just to see whether the troubles caused by the condensation water in the engine which is cold at start could be overcome. Evidently they can as the experiment showed. There was one ~~point~~ result. The sound was that we did not need

I believe the compressor. The third the
the center of rotation is where it should be,
the fourth that the hole is closer only
to some. The fifth that the mechanism
is better under all conditions, even
if it falls out. The sixth is that the
noise of the lower anastomosing is less
deadly. This may be good enough
for today.

I notice that the pipe carrying the volume
needed for compression is not connected to
the pipe through a very narrow hole and
long distance. Please see that the
stages will be gone soon.

The broken piece of pipe before the
room should be replaced.

I believe that the large exhaust
pipe should show the shaft when in
a central position. The fish has great
when I tried to turn the shaft it
resisted.

Please take care to keep everything clean.
Do not forget correspondence. Friday & Saturday

The Waldorf-Astoria
New York.

Aug. 22. 1901-

Dear Mr. Schmitt,

A disappointment as
to return. They will
not be ready for probably
two days, but the new
ring for long compression is
made. We have sent
the pattern of base for
new building to the
foundry. Work has
begun on the parts.

I see from the papers, I have selected —
this morning that my stationary some methods
friend J. P. has been It must have been created
cruising near the a ship in the opposite
Ct. and is now at Camp. The address
Newport. While there I was afraid they would
is no answer there not.
is large, though I The new method seen
am beginning to share to be progressing well,
your skepticism. Expect to be out to-
morrow please to receive morning
this morning my
N. T. S.

The Waldorf-Astoria
New York.

Aug. 22. 1905-

Dear Mr. Schuff,

A disappointment as
to returns. They will
not be ready for probably
two days, but the new
way for type composition is
made. We have sent
the pattern of here for
new Bulletin to the
foundry. Work has
begun on the parts.

I see from the papers that
this morning that my
friend J.P. has been
cruising near the
C.L. D. is now at
Newport. While there I
was to answer them
is hope, though I
am beginning to show to
your satisfaction. Expect
to be pleased to receive
this morning my

papers I have placed
by stationing some methods
I have not been able
to find in the opposite
of Camps. The additional
claims were inserted.
I was afraid they were
not.

The new method seen
there to be preparing well,
Expected to be out to -
I have
Tracy
T. T. T.

My letter was not lost
 by the mail. The
 all coming down
 to large. Of the
 the the shop is
 1800, no problem.
 and letter is good
 about.

The Waldorf Astoria
 New York.

Aug. 24 1901

Dear Mr. Scherff,

I expect to be at
 Redwood at the end of the month
 Friday

A. F. Scherff

The value of the
 very business
 I have seen in
 experienced with. It is
 very simple but requires
 a long time of
 the value. The stock
 will be around
 in the market and
 has been for some

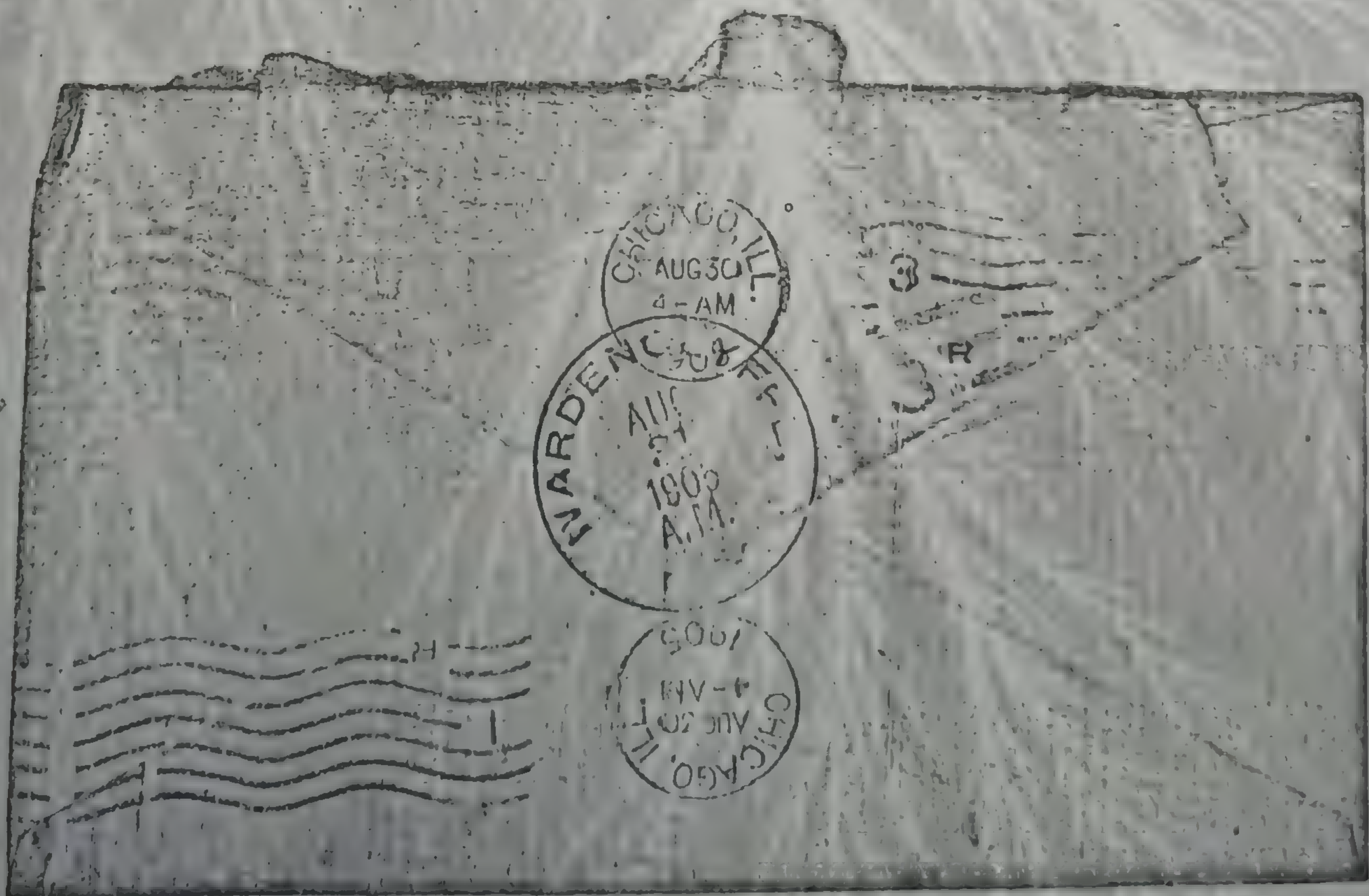
The Waldorf Astoria
 Fifth Avenue 33rd and 34th Streets
 and Astor Court
 New York.

NEW YORK
 AUG 24 1901
 11-11A

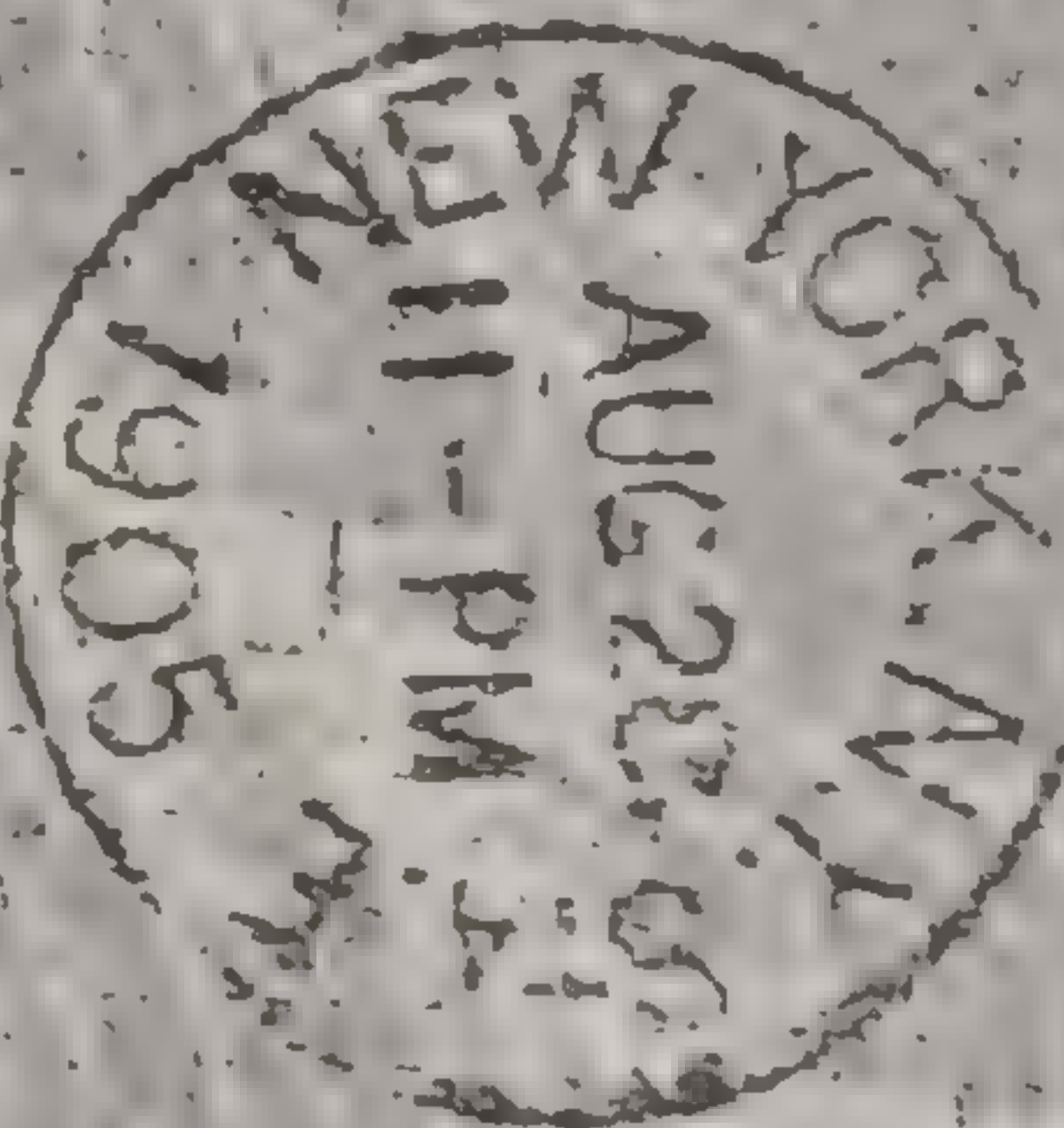
George Scherff
 Wardenlyffe
 L. I.

at least a connection
 from I have also
 thought of the
 and once flow to the
 four compression chambers
 from the central portion
 of the connecting tubes there
 need many holes. On
 the bottom there will
 be a drop for any oil
 that may gather there.
 The pressure connections
 in the back will have
 provided with valves,
 1 1/4". All this will
 be delivered to-morrow.

The work on the same
 machine is also progressing.
 I will need 1) of the
 following 1) for the gun
 and, 2) repair back on
 pipe and put large rod
 in order 3) get plenty of
 fuel 4) take off the back-
 pressure valve 5) slip on
 the pipe leading to the
 gauge and in 15 min.
 the pressure on the machine
 will be a good amount closing the
 pipe. This will kill the
 vibration of the machine
 on the gauge, otherwise



The Masbort - Astoria
Fifth Avenue 338 and 34th Streets
and Astor Court.
New York.



Wesley Scherff
Wadsworth
N.Y.

The Waldorf Astoria
New York.

Aug. 24 1905

Dear Mr. Schuyler,

The valves are in
very good shape
and I have had an improve-
ment made on the model we
examined with. It is
very simple but improves
the long operation of
the valves. The steel-
plates are spring around
as they operate and
has been made for me.

at least annually. The
from I have also. The
desired "oil" the
and flow to the I will
four compression chambers following
from the central portion out,
the connecting tubes through
which many holes. On pipe
the bottom there will be
the drops for any oil
that may gather there. The first
the pressure connections
the bottom will be
provided with valves, a road
1 1/4". All this will pipe
be delivered to the
on the

at least another
from I hope also
I expect ^{the} the
will flow to the I will
four compression chambers following
from the central portion out,
the connecting tubes through pipe
which many holes. The
the bottom there will be
the a drop for any oil fuel &
that may gather there. The pipe
the pressure connections
the back will be
provided with valves, a
1 1/4". All this will pipe
be delivered to room, with
on the

The work on the same
machine is also progressing,
to the point where I can send you of the
following 1) In the grain
out, 2) repair leak on
the large pipe as per large note
in order to get plenty of
water feed by taking off the back-
up pressure valve & slip in
there. The pipe leading to the
large gauge should be made
the pressure on the machine
showing a read almost along the
pipe. This will kill the
vibration by the vibration
on the gauge, otherwise

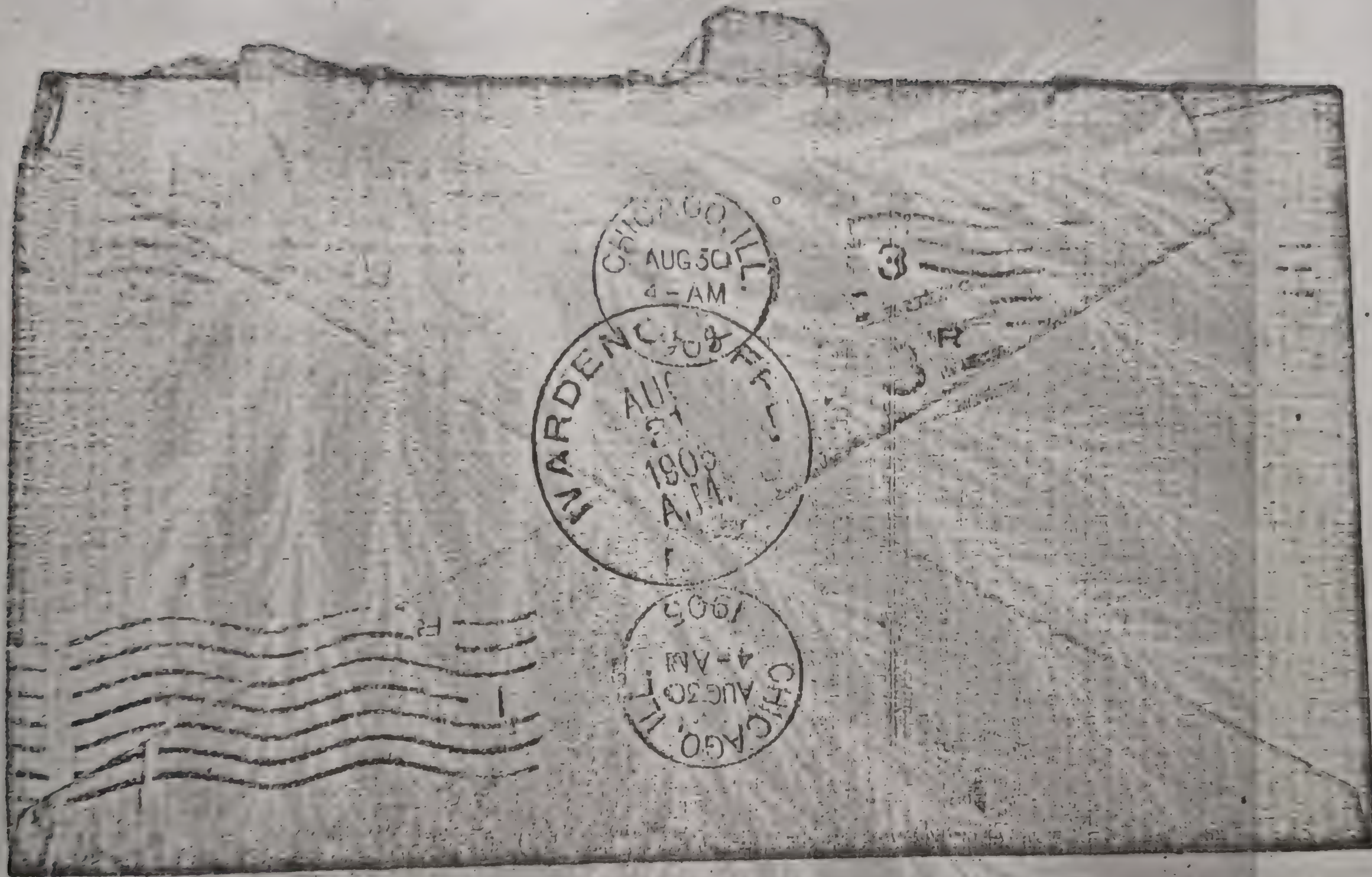
The letter will not look
long. The section of
the connecting channel
be large. Of some other
see the the shop is 2
order, no spider webs. // Dear
and letters are spoken
about. The

I am very much interested in
the study of the great unknown
things

→ Take

The v
to be
as the
then

on the page, otherwise



difficultly in understanding
Capital.

Please continue to
kindly condense and for
appear as well as you
can. The boxes since
have come but before
getting them ready
you must permit the
L. R. bars. Then I
shall bring with them
forward the day after to-day
over. The work is getting
into shape. Should be
ready by end of the week.
Sincerely yours

The Waldorf-Astoria
New York.

Sept. 20 1905.

Dear Dr. Schuyt,

I wish so heartily to
tell you something
enough that the
letter has
been written and is already
with this morning's
paper. The form
now has been ordered

on from charges & I am after my
at seem. But he friend Charles just
is an ~~old~~ criminal, back from abroad.
I never want have the business looks
they are not promising. If
they promise, to be short we can
consider any further to for in we must
know with him look for somebody
is always at / else but I should
be questioned / say that on them
I have not yet / promised. But
are getting better, will be in great

The Waldorf-Astoria
New York.

Sept. 20 1901

Dear Dr. Schuff,

I wish to have to
tell you something

about the matter

concerning the
papers

The form
has been ordered

on your charges & I am
is seem. But he
is an ~~old~~ criminal, but
I have come here. The
Mighty such a
Mighty formidable. To be
considered as further
known with him
is a bold one. I
R. Garrison
I have not 7
are getting better, will.

charges & I am after my
friend he friend Charles just
criminal, but for abroad.
not have the business looks
more promising. If
he shares or care
for them left in we must
have look for somebody
else but I should
say that on them
7 - proposition them
better, will be in fact

difficultly in entering
Capital.

Please continue to
kindly encourage me for

opportunity as well as you
can. The boxes will be

sent soon but before

the boxes are sent

you will have to

wait for them. The boxes

will be sent soon. Please

write to me when you

hear from me. I will

write to you as soon as

possible. The air is getting

very hot here. I am

very busy with my work.

I am very busy with my work.

Dear

I am

very

busy

with

my

work

and

am

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.



THE BELLEVUE-STRATFORD



THE ASTORIA

The Waldorf-Astoria,

New York Oct. 3 1905

Dear Mr. Scherff,

Your letter just received. I have
written you that I shall come out
Thursday noon. The vehicles for conference
will be ready to receive. I also
request to bring out a spool
for the charging coil as well as one
for a new secondary. I have heard
from the very much. I shall
be here with the vehicles and must

bring the machine complete to
the City, so as to settle certain
important details of manufacture
and is to pull me out
of the hole.

My friend J. P. since he has
thought his security that he re-
jects the business is not in
the line. It is rather late in
the day for him to appear here but
I am afraid he will have to
look elsewhere for funds. We shall
see how I feel more because
the proposition is a very good
one and both myself & 2.
can announce that the line
of the machine business is good.

During & Tuesday
Please have process particularly process column
long. Hope you have good Saturday.

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

New York Oct. 6 1905

Dear Mr. Scherff

The changes on the instrument
will take all the time to-morrow
and it will not be possible for me
to come out as I expected before Sunday.

I found to day that a number of
small improvements can be made on
the occasion. In the by and by
all ought to be in very good shape.

The secondary I look will be
broken down but I was glad to
find when I look the same

That the insulation process is very
effective it has not been perfect.
There was not the slightest defect
anywhere. The break occurred along
the rubber through the solder joint.
When we remedy the weakness in that
spot it will be possible to strain
the coil much higher. The customer
holds out very well as I have put
it in a rather severe test.

I had a little to say with Johnson
the lawyer of the property owners down
there. He seems to be rather a nice
fellow and I understood that they are
to make a number of changes. He
told me among others that they are
to have a different name (this is confidential)
I was glad to hear all and also that
it was out.
No problem bothers me

Lucy N. Fisher

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

Dear Dr. Scherff

New York Oct. 9 1905

I saw my friend Hopmann last night & he declared himself ready to take up the matter - drafted a program for inauguration of the restaurant, perhaps forming a small company. He is an old friend and absolutely sure. That would be excellent but for the troubles of the moment. When does the P. Inf. vote become due? Will you please let me hear about it by return mail.

The overfriendly people called on me. They want to know about the situation & I see the opposition within. They say they will

can through the original proposition either
Selli. This means that I must have been
up up something for them on that day.
It is still a problem. Suppose you
propose Russell that I give him a 2 m.
note for say 100% at the 2 a -
developing this. He might be willing
to accept if not too so 30 days obligation.
At any rate you may try.

The Pearson people expect to finish
the other side of the mountain all except
secondary. They will want the charging
card. It will be necessary for you to
hurry the enclosure with three papers and
they will have to be handled thoroughly.
I expect that letter to reach you by
noon tomorrow Tuesday and you might
have time to send me the instrument
including counterpane which is still good.
What I want to get particularly is the
hand secondary which I have been pursuing
out well. The you cannot do anything else
so I am sending by express so that I get it
to-morrow morning. Sincerely, W. F. Parker

Dear Mr. Scherff, please do
old as agreed. Hope the
card will come out all
right

Sincerely

I trust will
interest you

W. V. Scherff

The Waldorf-Astoria
New York.

Oct. 9, 1900

Dear Mr. Scherff,

The late experiences and
death of my son have
completely upset me. I
feel that I must be generous
as I have proposed myself
to be with them would
be out of place. Every
dollar that I get for
manufacture will be pain-
fully earned and I think
that if I can spare some

Mr. George Scherff

Wardensville

L. J.

thing for other. I had better writing to you writing
 but there is no profit in it, and order. It would be
 more desirable. Please to see
 go carefully over the I have thought after
 accounts as see just what I have learned from
 it done to them. I am afraid who was such
 shall pay only for work. But if we
 they have done nothing had the or two we would
 more. As you know I am not sure. The distance.
 have intended to pay them. It would be practicable to
 full time as though they live anywhere in the
 had work without interrupting neighbourhood as if the
 I shall see some friends running the staying would
 to day but cannot yet be a small matter.
 make a proposition before. If something develops
 the new arrangement will be day you will hear from



Mr. George Scherff

Wardenburgh

L. J.

The Waldorf-Astoria
New York.

Oct. 9. 1904.

Dear Dr. Schmitt,

The Club expenses with
Clerk & Secretaries have
completely upset me. I
feel that to be generous
as I have proposed myself
to be with them would
be out of place. Every
other thing I get for
the manufacture will be permi-
sibly covered as I think
that if I can spare some-

in the
the
all

The Waldorf-Astoria
New York.

Oct. 9. 1904.

Dear Mr. Schmitt,

The late expenses will
be to some extent
completely covered. I
feel that to be generous,
as I have proposed myself
to be with them would
be out of place. Every
other thing I get for
the manufacture will be per-
fectly satisfactory and I think
that if I can spare some -

thing for others. I had better not
let them ~~know~~ ^{know} who are order
most ~~discreetly~~ ^{discreetly}. Please to not
go carefully over the I have
accounts at see just that what
it does to them. I a friend
shall pay out for work. whether
they have done anything had other
more? As you know I have
intended to pay them I want
shall know any through they have a
had work without interruption. neighbor
I shall see some friends running
to day but cannot yet be a
near a ~~proposition~~ ^{proposition} before. If
to some ~~discreetly~~ ^{discreetly} as all to day

I let better ready to in good working
who are order. It would be
Please be sure.

I have thought after
just that that I have learnt from
I am a friend who was with
for work. However that if we
anything had one or two we would
have I am sure the distance.
I would be practical to
say that live anywhere in the
neighbourhood as if the
in language place and be regularly
friends. Meaning the staying would
not yet be a small matter.
I am sure. If something develops
as all to day you will hear from

Dear / Mother please do
all as agreed. Hope the
conce will come out all
right.

Travelling

Travelling will
interest you

✓ Verba

Dear

The
Clock. The
Complete
Faint. The
as I have
to be
be out
dollar
Manufacture
fully c
has i

Dear -
 I am sorry to hear
 of your illness. I hope
 you will be soon
 well. I am
 ever your
 friend
 J. M.



NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York Oct. 11 1905

Dear Dr. Scherff,

I got the instrument today and
am well satisfied with its appearance.
The coil you forwarded (secondary) seems
to be all right, but the condenser
and not that I developed an
defect when I tested it. That is
only a hope that can be removed
and sent. The other machine
will be probably received tomorrow.

I expect that you have been the
charging and so that there will be
no difficulty in getting the money.

Hope you are progressing in
the making of the book. I am
sure that you will perform a

very good deed in getting a copy
of the book successfully.

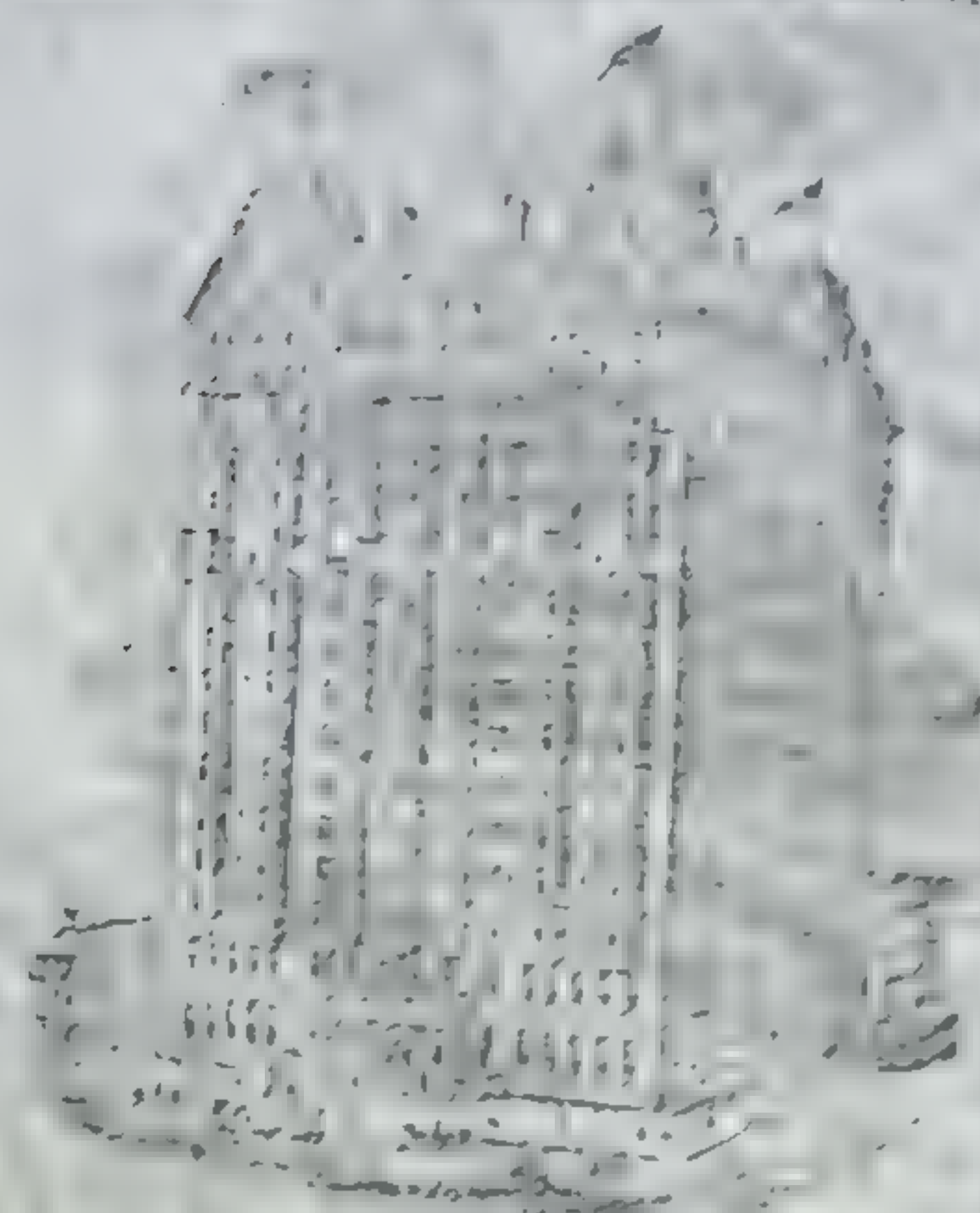
I have no interests in my life.
The trouble is that I am
not able to see what solution there is
to the problem for. This time he
will have to send some one with
a good bundle.

The Ocean people are fixing on the
price of the instrument. I hope it will be
reasonable. We shall be in with the
secondaries and make the connection. All
the work can be done in New York.
Will write you if anything of importance should occur.
Yours at heart.

NEW YORK CABLE ADDRESS "THE WILSON NEW YORK"
PHILADELPHIA CABLE ADDRESS "WILSON PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York, Oct. 11 1905

Dear Mr. Scherff,

I got the instrument today and
can well believe it will be of use.
The cord you forwarded (Sunday) seems
to be all right, but the connection
can't hold about a developed
defect where I showed it. That is
only a hope that can be re-
medied easily. The other machine
will be probably finished tomorrow.

I expect that you have covered the
charges and so that there will be
nothing to be feared.

Hope you are progressing in
the making of the book. I am
glad that you will perform a
coup d'état or rather a coup
de main successfully.

I have no so much to say to you.
The troubles are so many that I am
sure you will see that evolution is
not a process. This time he
will have to send Santa Clara with
a full bundle.

The Ocean people are figuring on the
price of the instrument. I hope it will be
reasonable. We shall have to wait the
scandalous and make them understand. All
the rest can be done in Paris. I
will have you if anything of importance should occur.
Yours at Paris.

Things will be
better. I am already
sum to carry out the
proposals with ~~the~~
on some terms.

The other instrument has been
changed and I shall get it
in time all ready with
internal L.C. I propose to
put the new sending in
it and shall be there
one week completely for
demonstration to my friends. They will hear for a
or possible. Truly

W. F. Felt

The Waldorf-Astoria
New York.

Oct. 11, 1901-

Dear Dr. Schmitt

The instrument reached
me last night and
I worked with it until
a late hour. The seem-
ing seems to be all
right despite of the
hours. I was afraid
they would form as in
did not apply the
measures after the

Comprehension. When he reads very carefully.
About the business we hope you will succeed
must apply the processes in the Results for
for a long time and with persistence. It would
be excellent. The results will be important as they
are. I am
You did not say anything about the new
space (charging and) but I am
I expect that it will be the same as
be around today. Please remember the
results. It can be a bridge
not to be made. Just a little more

The Waldorf-Astoria.
New York.

Oct. 11, 1901.

Dear Dr. Schuyler

The instrument reached
me last night and
I fiddled with it until
a late hour. The tuning
is very poor but all
right despite of the
hours. I was afraid
they would find as we
did not apply the
means for repair the
Tuba

Compressor. When the
short the "Boring" can we stop
must apply the pressure in
for a long time and will
come. The results will
be excellent. I am
am quite convinced,
you do not say any -
thing about the new
space (charging and)
I expect that it will be
be around to-day. There is
revelation that the machine
will be sent back for

When he built very carefully.
I hope you will succeed
in forming a fine Revue for
and with position. He would
not be surprised at this
stage.

I wrote a letter
to you - I am
not surprised at his
long but rather fine
it will be. He is
I have insisted
and I am
back. Just a little more

Things will be
better. I am already
sum to carry out the
proposals will happen
on some lines.

The other instrument has been The
changed and I shall get it in
the day all ready with I for
the next 10 days I propose to a lot
find the two sending in day
it and shall to have eight
one million completely for hours
destruction by fire they
You will hear for a son did
as possible. Truly
Yours

very close in the
 need for such a
 by showing the
 importance of the
 house I feel fine
 the same efforts. There
 is no doubt that when
 all the subject are
 carefully considered
 results will be very
 notable. I feel quite
 pleased
 will visit L. morning
 evening again. Possibly
 earlier.
 Please attend to Randall
 business and see that we
 get paid. sincerely
 A. T.

The Waldorf Astoria
 New York.

Oct. 15, 1905

Dear Mr. Scheff,

I have just read
 your letter and was
 the secretary. You
 can prepare the paper
 and the arrangement
 for wedding is made
 nearly both parts. It
 is necessary to deliver
 the laws from the

Could already send. I intended to visit
say to you the day after as it seems only
L. morning and will
know something definite to improve. Evidently
of that time. The preparation of the
I was surprised to see before looking in
will the substance deteriorated. You have
worked when I looked before that the
it has. The mill ~~condition~~ did not
important thing was keeps the charge long.
to consider her ~~work~~ This I believe is
the condition was
stand. It seems per- due simply to
feeling safer for I the poor ventilation
showed it for beyond power of the fibre
boothings. be there

The Waldorf-Astoria
New York.

Oct. 15, 1905

Dear Mr. Schuyt,

I have just read
your letter and
the accompanying
can prepare the paper
and the arrangement
for wedding is made
ready both parts. It
is necessary to deliver
the books from the

Could already and I
say to you the day after the
L. morning and we
know something definite to
be that time.

I was surprised to see
the substance of the
work when I looked
it over. The mill
reported thing was
to cover the same
the condition was
stand. It seems per-
fectly safe for the
structure is for
legends from
bookkeeping

and I the intended limit
day after and it seems only
will
definite to improve. Evidently
the progress of the
and be needs before working is
debris needed. You have
looked noticed that the
will ~~consider~~ did not
was keep the charge long.
has been that I believe is
and done so well
see from the poor manufacturing
the beyond power of the fibre
workings. be there

Wendy that in the
next we make
By showing the
importance of the
house I got from
the same effects. There
is no doubt that the
all the advantages are
completely outside the
result, will be removed
table. I feel quite
pleased
will will be moving
evening again. Possibly
earlier.
Please attend to the
business at the same
for just. sincerely
A. T. C.

P.S

The Oxford people
called.) Let them
I am ready to carry
out agreement. They
said that was all
I am ready to do
and they will attend
to the matter. I wish
they would at once.

The Waldorf-Astoria
New York.

Oct. 19, 1905

Dear Mr. Schuff,

I am sorry to find
that I shall not be
able to take the early
train tomorrow Friday
as I expected. Then
business with my friend
L. as before is not
yet concluded, but
we expect this is

will be to-morrow, either to-morrow afternoon
I want you to prepare or Sunday morning.
all details you can to The indications are that
show the market for the people people will
the instruments to be made a fair price. The
manufactured. Wopham Sept. 10th to-day
must have that be that I shall be sur-
said. If you get the price low for the
everything you can for can make them.
the cases of them. Do not forget to
performances only free the velvet a little
at manufactures we will the summer when
can knock it together I have given you
in shape when I am using light oil.
out. This will be Sincerely
Yr. Trst O.S.

The Waldorf-Astoria
New York.

Oct. 19, 1905

Dear Mr. Schuff,

I am sorry to find
that I shall not be
able to take the early
train tomorrow Friday
as I expected. The
business with my friend
L. A. Warren is not
yet concluded; but
we expect to be
settled by the 21st.

will be L - money. either to
I would ~~not~~ ^{be} prepared or I should
all ~~del~~ ^{the} ~~you~~ ^{can} be The idea
show the market for the Peru
the instruments ~~be~~ make a ~~for~~
manufactured. Bygones Lpt. ~~last~~
must have that be Not I
said. If you get ~~for~~ ~~the~~
everything you can ~~for~~ ~~the~~
the ~~cases~~ of ~~the~~ Do not
perform ~~clerk~~ ~~only~~ free the
at ~~manufactures~~ ~~are~~ ~~with~~ the
can ~~work~~ ~~it~~ ~~together~~ I have ~~of~~
no ~~stop~~ ~~when~~ I am ~~using~~ ~~the~~
one. This ~~would~~ ~~be~~

either to-morrow afternoon
or Saturday morning.
The indications are that
the people will
take a fair price. The
Dept. told me to-day
that I shall be sure
- getting about two for the
can make them.
Do not forget to
oil the valves a little
and the pump. When
together I have given you
I am using light oil.
Sincerely
V. T. Ash P.S.

P.S.

The original people
Cult.) let them
I am ready to carry
out agreement. They
said that was all

and they will attend
to the matter. I wish
they would at once.

Dear Mr

I am

that

able to

have to

as I am

business

L. at

get to

be up

at 4:15 PM

There will be

nothing definite as yet with
my first draft.

The Waldorf-Astoria
New York.

Oct. 26, 1905.

Dear Mr. Scherff,

Please be careful

to receive anyone

who may present him-

self as asking for

you with cordiality

and show him place

where he can sit.

Also accompany him

to the restaurant.

Very truly yours,

John D. Rockefeller

I propose to publish
the first volume of my
Capital in 3 copies

I propose to publish
the second volume of my
Capital in 3 copies

I propose to publish
the third volume of my
Capital in 3 copies

about 1872 or 1873

in the form of a

program of research

into the history of

the American people

I am full of hope

and believe in the

future of the

people of this

country

and

trust

that

you

will

be

of

which will understand
fully the present
to proportion value
of the property. That
is very important.

Mr. Andrews has agreed
to furnish enough money
to build a Spanish school
on the other side of the river
perfectly complete. He
expects to be able
to get this money
quickly at a small
expense. This is good.

Mr. Hoffman will
take up the matter of
improving the body of the
I get articles of
Ore for 100 pounds
They gave me a close
idea yesterday. Price
of this kind of material
will not exceed \$20-30.
We can furnish the work
for \$10. So the
price may be \$35-2
certainly. There was the
plenty of fuelness

There are 14 nothing definite as yet could
be done by first letter

The Waldorf-Astoria
New York.

Oct. 26, 1905.

Dear Dr. Schaff,

Please be careful
to receive anyone
who may present him-
self here asking for
you with courtesy
at your place
between 11 and 12.
Also, if you
will, please
advise. This is personal. Very
truly
yours
John T. ...

and will understand
fully the present
to proportion value
of the property. This
is very important.

R. Andrews has agreed
to furnish enough money
to buy a spring water
one lot. He is an
agent for Congress. He
expected to be able
to get the money
quickly at a small
expense. This is good.

decide
value
Then
I get
L. of red
money
in election
be
for
small
L. of

R. G. Taylor will
take up matter of
manufacture to-day when
I get estimate of
Price for 100 machines
They gave me a close
idea yesterday. Price
of their work is
about \$20-25
for each machine
for 100 L. M. L.
for the machine of 35-40
costing them more the
price of purchases

[illegible]

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 PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York Oct. 29 1901

Dear Dr. Schull,

I am quite pleased to see you under-
 standing the position. He is impressed
 by you and I have a feeling that
 he will develop into a splendid consultant.
 We have found him to be the fine flower
 of the T. C. and a very capable man.

Please keep in mind that I am
 blowing about my place all the time
 and trying to attract some
 business in my neighborhood. I am
 one might be up at any time and

and for the same reason,
I will plan to be
just what I want for
myself. I will not let
I will be sure to get
what is needed. I will not let
perhaps it will be
to let you know. I will not let
to have the 100 inches. I will not let
as a any sacrifice.

I will not let the 165 y. the
pay about 84 in. per second. It
is just 168 in. It will be just
the same. I will not let
as the 100 in. I will not let.

Forcing

or Tull

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK.
THE BELLEVUE-STRATFORD, PHILADELPHIA.

The Waldorf-Astoria,

New York Oct. 30 1904

Dear Mr. Scherff,

The snow has been forecast this
morning, I have been here since
you left the line.

The day passed without my getting
into my apartment. I have so much
to do as the details of manufacturing
at the Peace Plaza hotel, much
of my time.

I am expressing the secretary of the
Hotel Plaza and have been H. 24
as the correct (do you) as agreed.

Seven papers between each layer. The
space on each side $\frac{1}{8}$ ". The
I advise that the outer flanges have
no grooves. You may drill one by
taking them off, after work is over. So
be sure to make a slot with
the saw for the connection of the
ends to the screw in the middle
flange. Do this before beginning the
assembly, as it will be difficult
to do it later.

As you will see the first few
papers will be a little narrower
on account of the square corners on
the intermediate pieces. Remember that
when beginning the distance between
the outer flanges of side flanges is $4\frac{1}{2}$ ".

Mr. W. H. Thompson was out today. I did
not think it advisable to interrupt the
first. Expect to show in a day or two.

P. S. Several demonstrations
in wireless performed called at 10 o'clock.
The new coil has attracted attention. They asked how long the

will run

from the rubber cover of
the book. From the binding
book they are sometimes
3" long. I have the
order with 4 sheets
will show the wood
of the book.

The people collected
to day and they will
come out with me as
soon as possible possibly
Thursday.

Both plants are somewhat
like the other but
leave off early.

Ploughing every 4 days

Please look out for wood.
Write me if you have from
The Waldorf-Astoria
New York.

Nov 13 1905.

Dear Dr. Schacht,

Thirteen seems to be

very lucky number.

First of Jan I will

the F. just for

number as has been

going out of his office.

He was most friendly

and said that he

was sorry he had

to go out but he the Reg- Company the
will talk with me said something about
some other day. I gave an arrangement.
have my men as one The machine was the
as the law of gravi- every (brought by a
tation works. I know messenger who I sent)
it. and it works splendid.
Saw Reynolds about the by. The streamer for
order for 100 machines. he clear across. The
said he would let me of the flange is en-
know. I think some- plated cover with
thing will come of my lighter than the
proposition. spring is red hot.
also met the chief Stovecase came also
engineer & advised me

Please look out for word,
wrote me if you have from
The Waldorf-Astoria
New York.

Nov. 13 1905.

Dear Dr. Schuyt,

Thirteen seems to be

my lucky number

For I see I have

Dr. F. for a

house as he was

living out of his office

he was not friendly

and said that he

was sorry he had

to go out but he R. R.
with talk with me said
some other day. I
have my men as one The
as the law of gravi- every
tation works. I have passage
it.

Sir. Hephern about the end
order for 100 buttons. he by
said he would let me clear
them. I think some of the
thing will come of my pleat
organization. light
also see the chief
engineer & advisor of
Hepburn

The first of the
 things I saw
 was the
 The first of the
 things I saw
 was the
 The first of the
 things I saw
 was the

from the sub-covers
over. From the bridge
both the ends contain
3" long. I think the
condition with 4 sheets
will show the work

done.
The rougher cells
4 by 4 they will
come out and be a
good example of
the work.
Both faces are sand
paper as the other was
taken off early.
Ploughhouse Survey 1715

Plan
Vol

Dear
The
2
For
The
The
long
the
and
was

The Waldorf-Astoria
New York.

Dec. 4 1905

My dear Mr. Schuyler

I am a little late
— you know I have managed
to get some of the best
tubers. Of course I am
leaving them out and will
have enough remaining
for some time.
Please to have them

up the matter with L. and see if the
the O. J. Brinkley I
do not think that I have been
they will not be a very good
on the point of view. There can be no doubt
many to go of it. By the way I am
delighted and I shall be
a little for me. I shall be
live. I have a great deal to say. I
better chance to do it. I shall be
this through some. I shall be
and I shall be. I shall be
with myself. I shall be. I shall be
Please let me know
as soon as possible
Sincerely & Truly

The Waldorf-Astoria
New York.

Dec. 4 1905.

My dear Mr. Schuyler,

I am a little late in
replying to you. I have been
so busy with my school
work that I am
hardly able to find
time to write. I am
for ever,
Dear Mr. Schuyler,

[illegible]

My

I

you

to go

little

learned

read

for

person

will I want to fully to
use anything else in the
summer the covering of the upper
section will not need to be
specifically designed, can be the
same as that of the section below.

I found Japanese paper which will
be suitable for construction. Suggest
to please order to morning as
soon as I have from the station
respectfully My C.

Can you tell me about the
role of P. J. Davis? When will
it be done? Have packed
away my old chess book and do
not know date.

Sincerely

N. T. Clark

SS

March 28 1906.

Dear Mr. Scherff,

I am glad to have
received it a conclusion will
reference to the covering
of the lower which can
be improved. After
all glass ribbed is the
best. It is the cheapest
covering to begin with.
The charge is 8 1/2 cents per
square foot 1/8" thick. The

outer area of the house is
approximately 30000 sq. feet.

Cost of material $30000 \times \frac{8.5}{100} =$

$85 \times 30 = 2550$ as with less

$2000 =$ will cover total cost.

Note 9 That we do not require
sheet piling. i.e. that will be
necessary in the run 32 strips.

up to hold plates.

a) we do not want any windows

wherever

c) we get all the light in
from inside

d) but insulation on outside
against moisture

e) perfectly fireproof covering.

f) There will be very little
as improving

g) Work inside will always
be kept warm to dry
and will be insulated.

h) The plates which come up
to 12 feet length will
be cut all to exact size

i) Order can be filled
within six weeks

j) quickest time
to be.

The house can be painted
any color if necessary. Also
in any ornamental way.

As I have been at this

MS

March 28 1906.

Dear Mr. Scherff,

I am glad to have
received a conclusion with
reference to the covering
of the tower which can
not be improved, after
all glass ribbed is the
best. It is the cheapest
covering to begin with.
The charge is $8\frac{1}{2}$ cents per
square foot $\frac{1}{8}$ " thick. The

outer area of the house is
approximately 30000 sq. feet.

Cost of material $30000 \times \frac{8.5}{100} =$

$85 \times 30 = \text{Rs } 2550$ with labor

Rs 3000 = will cover total cost.

Note 9 That we do not require
sheet piling. i.e. that will be
necessary in the case 32 strips
up to the total plates.

b) we do not want any windows /
doors

c) we get all the light in
room inside

d) best insulation on outside
against moisture

e) perfectly fireproof covering.

f) Taper will look very well
as appearing

g) Wood inside will always
be kept warm to dry
and well insulated.

h) The plates which come up
to 12 feet length will
be cut all to exact size

i) Order can be filled
within six weeks

addition // quickest time

e. l. c.

The brown can be painted
any color if necessary. Also
in any ornamental way.
As I am located at this

rather. It would be folly to
use anything else. In this
summer the covering of the upper
section will not need to be
specifically designed, can be the
same as that of the section below.

I found Japanese paper which will
be suitable for condensation. Expect
to place order tomorrow as
soon as I hear from the printer -
hastily M. G.

Can you tell me about the
role P. J. Bank? You will
it be done? Haven't packed
any of my old chess books & do
not know date.

Sincerely

N. T. Park

NEW YORK CABLE ADDRESS "WALDORF NEW YORK"
PHILADELPHIA CABLE ADDRESS "BELLEVUE PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York, April 28, 1906

Dear H. Scherff-

Inclosed check \$2.00 which please
forward to H. Fenwick on our rent.
Say that my business is developing slowly
but steadily. Also his not to
do anything more for Clark on my
account. I asked H. Fenwick help on
his behalf but in view of my experience
since I was like to keep away from Clark.
has very been busy that H. R.
has a bad cold and is not likely to
come down here before Monday. Intended

Received this morning
summons in the Clark
matter. It was thrown
through the door just
as I opened it. The
fellow tried to get into
my room last night
at hotel & about.

To-morrow I hope to
see my friend R.
was unmerciful to see
me.

Yours
D.S.
Please write

The Waldorf-Astoria
New York.

March 27, 1906.

Dear Mr. Scherff,
I expect that the
condenser frames (6)
will be shipped by
to-morrow. You will
be pleased to find
that I have made an
improvement which
does away with the

Receiving of money — glad to come back but
separate connection to his home reports the
and terminal after he gave proper notice
the conductor of com — of a few months to
pleted. The firm which was

I found the Japanese employ him. I encourage
paper which is extremely employ him. I encourage
length as very thin. but to stay there but
ought to go on good I want to
results. request as I like

After called this him I am sorry
evening in up to date. But he does not
attends with a Cardinal's approach the unusual
ring on one of this chances for document.
figures. He was to

The Waldorf-Astoria
New York.

March 27, 1906.

Dear Mr. Scherff,

I expect that the
condemner frames (6)
will be shipped by
6 - morning. You will
be pleased to find
that I have made an
improvement which
does away with the

Receiving of money —
separate connection to
each term and after
the conference is com-
pleted.

I found the Japanese the
paper which is extremely
rough and very thin. I
ought to have found
better.

After calling them
evening in up to date
athletic with a Cardinal's
ring on one of his
fingers. He was in

my — glad to come back but
action to his home required the
after — he gave proper notice
of a few months to
the firm which was
extremely employs him. I encourage
them to stay there but
good I must
regret as I like
them to be on
to date that he does not
Cardinals' appreciate the unusual
their chances for a document.
to be

Received this morning
summons in the Clerk
Hall. It was thrown
through the door just
as I opened it. The
fellow tried to get into den
my room last night
at twelve o'clock.

To-morrow I hope to
see my friend F. He
was successful so far. He
meets

N York
P.S.
Please write
does

NEW YORK CABLE ADDRESS "WALDORF" NEW YORK
PHILADELPHIA CABLE ADDRESS "BELLEVUE" PHILADELPHIA



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria,

New York March 24, 1906

Dear Dr. Scherff,

Your letter just received. My last
one has evidently not reached you yet.
In reference to glass covering I learn
from Hecroft Bros. who did quite a lot
of work for my friends Sharp & White at 2 P.M.
that glass can be had (same kind) tinted blue
& any color. For $\frac{1}{8}$ " thickness 10¢ per sq. foot
and for $\frac{3}{16}$ " 15¢. The cost of the frame
is not prohibitive. Order can be filled
30-60 days.

The Japan paper can write that they can
make paper much thinner but is some

The ... on both ...
 sufficiently ... to the ...
 the ... in ...
 him ... the ... the ...
 paper ... as ...
 taken ... To ...
 improve ... I would ...
 give ... close ...
 and from the paper they ...
 say, help the thickness ...
 to let do you think ...
 this scheme ... I believe ...
 it is good. Would not ...
 require additional apparatus ...
 except two rollers ...
 drive for ...
 ...

The Waldorf-Astoria
 New York.

April 6, 1906.

Dear Dr. Scherff,

Unless something
 about ... me ...
 expect to ...
 ...
 Dr. Pilch has informed
 me by letter that ...
 ...
 ...

I have an idea
 the program is to be
 I shall see to it that the program is
 held as the legal basis for the people
 and some and not in the field, in the
 like the case. To be sure the
 I am very for the people's
 future. You for behind of
 will be all. Then after
 for his family. Thoroughly
 The changes of the
 have been people. I am sure
 on account of his. I am sure

The Waldorf-Astoria
New York.

April 6, 1906.

Dear Mr. Schuff,

Unless something

about Thomas has

changed he can not

leave tomorrow

Dr. Pict has informed

me by letter that he

will not leave here

before the 10th

proposed by your committee
the first ~~proposed~~ ^{proposed} ~~committee~~ ^{committee} ~~enforce~~ ^{enforce}
I shall see to it that

by day as the legal
and ~~enforce~~ ^{enforce} and not
take the case.

I am sorry for the
proposed ~~committee~~ ^{committee} ~~enforce~~ ^{enforce}
will see to it that

for pay his family
The charges of the
the ~~people~~ ^{people} ~~for~~ ^{for}
on ~~charging~~ ^{charging} to be

at them. I have an idea
before that we can't do
the paraffin process
ourselves at Bolton
because the people
in the field, in the
city. Trust just the
paraffin is one app.
for treatment of
them after
the thorough
preparation with the wax
(wax & paraffin process)
take them out, just

the a on both for
sufficiently to be the
the one is better and
the other the other the
paper and is more
between two rollers. To
improve further I would
use the rollers closer
to the paper to
help the thickness
the rollers? I believe
it is fatal would not
require additional apparatus
except two rollers and a
drive for the rollers. Please
write to me.

we shall get. I
 think it will make
 a fine entrance with
 the kitchen which are
 almost equal to the
 the kitchen of that there
 Japanese brown paper is
 better than the other
 I am
 disappointed in the
 at the the porcelain
 pieces before reaching
 in order to be sent
 that we get in 2 more.
 Francis
 N. T.

The Waldorf-Astoria
 New York.

April 16, 1906

Dear Dr. Scherff,
 Have ordered 8 telephons
 on the pipe of your
 dispositive pipe from
 the Co. to be in
 1200 feet
 125 above
 6 feet (brass).
 2 buckets of lead
 can be used in the same

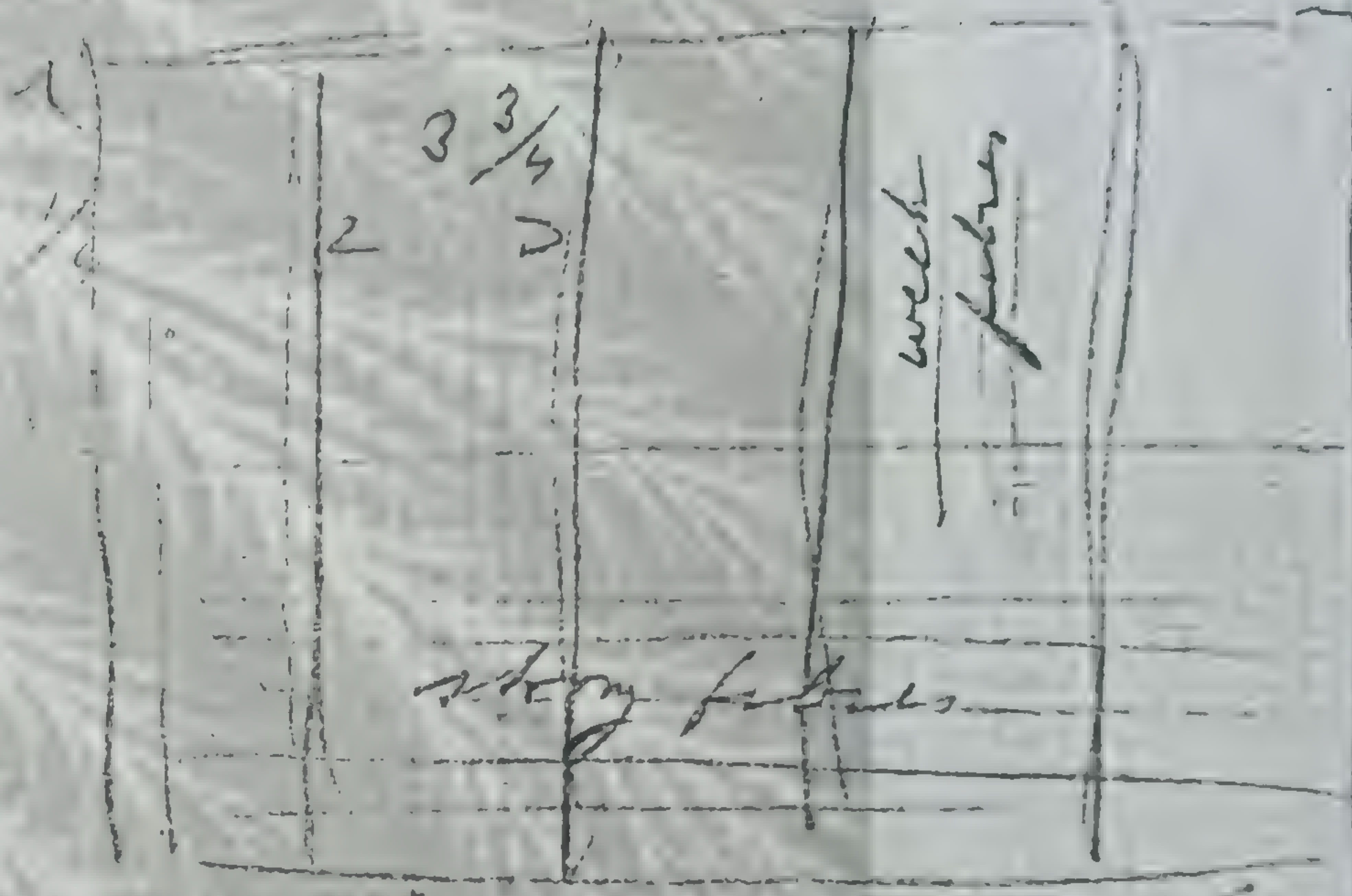
most of them
may be made. They will
not be better. 2)

12-1-19

From your letter
I feel that of
Penny Bridge.

• Found one travelling
very important to report
all type paper in time
about 5 years
their very best. The
paper is beautiful
of for one countryman
American who is
travelling probably now/1912

Per year off 275 and
give 10 sheets each
to



This will make him
 direct all right,
 The paper we have
 particularly was much
 improved in the

The Waldorf-Astoria
New York.

April 16, 1906

Dear Mr. Schuyler,

Have ordered 8 telephones
a receipt of your
expressed pipe from
the same Co. will be
sent to you (1300 feet)
also some T & S valves,
6 faucets (brass).

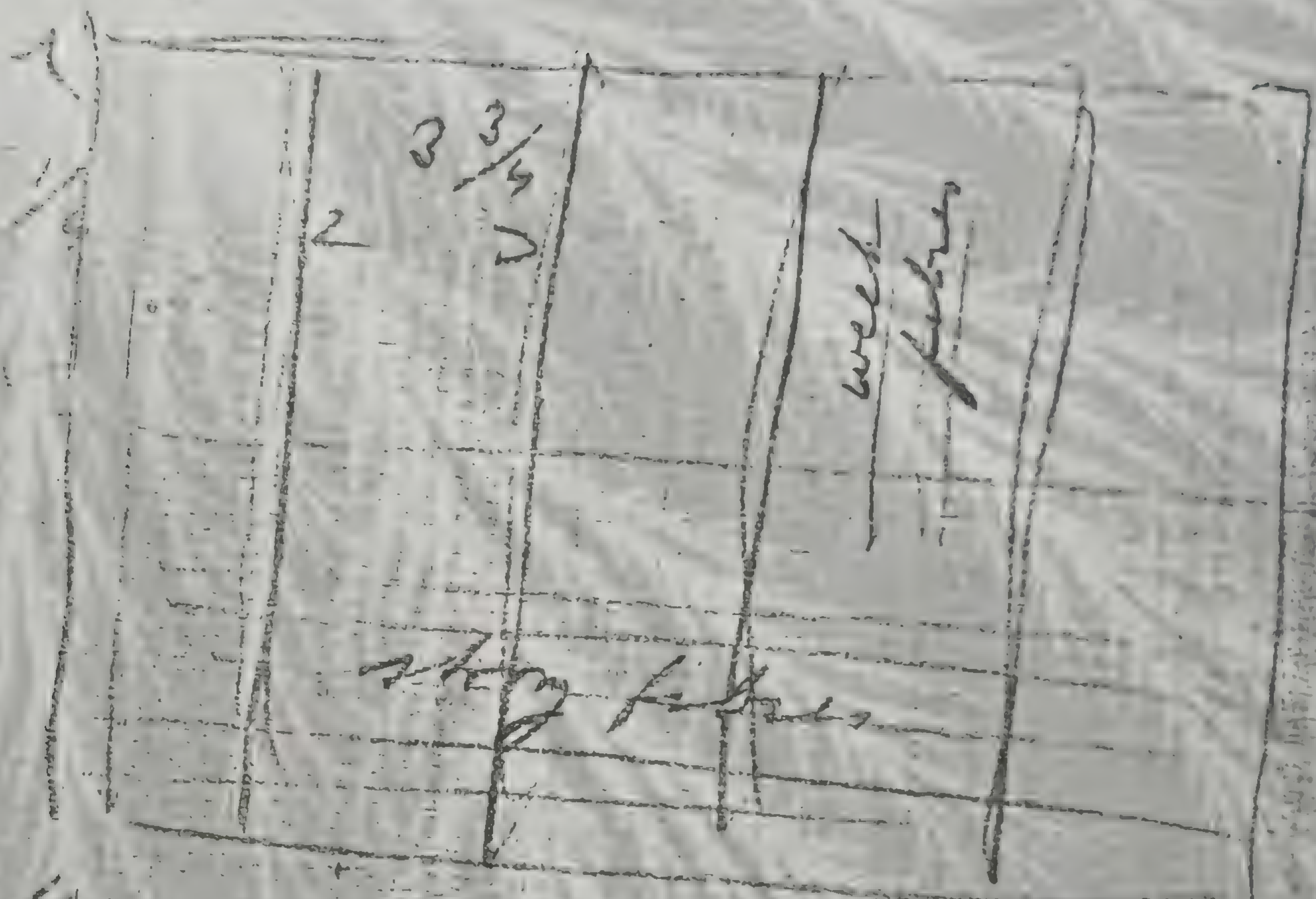
2 barrels of
low water pressure

12

4

12
A
D
12
2

Per team of 27 r and
 June 10 sheets like
 this



This was taken for a
 draft all right.

This paper we looked
 yesterday was much
 information to show

we shall get. I
think it will be
a fine experience with
the Richardson children
about, especially to form
Richardson of that. The
Japanese have prepared
with the children in the
common room. I am
whispering to the
it is the position
between before hearing
in order to be sure
that we get the
Rising
to the

only 45 ft for 1000 ft
 so the depth of the
 water probably not be
 much.

The Waldorf-Astoria
 New York.

April 16, 1906

You might expect to
 find for digging
 holes in water as
 it is so common to
 find 3' deep. The 3 1/2'
 I hope to get some
 news of this from
 you that work has
 begun at least on the
 lower bridge

Dear Mr. Scherff,

The "Industries" was
 an article on the
 system of trans-
 mission and
 how to have you
 perhaps take
 advantage from
 my application on

N. T. ...

which I would
 like you to see -
 no delay.

The Waldorf-Astoria
 New York.

April 23, 1906

Sincerely

Dear Mr. Scherff,

N. T. ...
 Drops a large stone
 in case

To-day being rainy
 occurs to me to
 suggest to the person
 that they prepa-
 re some plan for
 getting at the under-
 side of the platform
 that part they could
 have some for
 bad days. They

The Waldorf-Astoria
New York.

April 16, 1906

Dear Dr. Schuyler,

The "Industries" has

an article on my

system of business

and on

I have no time for

it perhaps later

excuse me from

my application on

only 446 $\frac{10}{100}$ per 1000 feet,
so that my rough estimate
will probably not be
exceeded.

You might suppose that
I think for digging
trench as narrow as
you can conveniently
make 3' deep, or $3\frac{1}{2}$

I hope to get to know
how to better form
you that work has
been at least on the
line.

N. T. R. M.

The Waldorf-Astoria
New York.

April 23, 1906

Dear Mr. Scherff,

To-day being raining
occurs to me to
suggest to the person
knowing where they prepa-
re some flowers for
putting at the under-
side of the platform.
This part they could
then ~~arrange~~ ^{arrange} for
and ~~days~~ ^{days} They

Dear Mary

N Tule

What I was
telling you to catch -
unusually

Unusually

N Tule

Drop a little water
in can

Dear
T
suff
less
u.
further
side
This
than
card

I received word of
Telephone that the
Peace Co. will ship
all boxes and other
material for Anderson
at once, the box
large enough to hold
all boxes for contents
when application is made by

The Waldorf-Astoria
New York.

Apr. 24, 1906

Dear H. Schmitt,

I forwarded yesterday
through Mrs. Gardner's
kindness some reports,
which have of interest
and information, and also
a few other things which
will be of interest
to you. Please send to me
the original of the
report. That will
be all.

The shop has been
I received the 7th of
last to the present
example of the
and my for the

Remember me
to all the
family and
the
the
the

Respectfully

W. T. C.

this newspaper stands
540. I believe we
can make a roll over
all, as suggested before
hope you have succeeded
in getting rolls and some
help as I shall have
to take some from
the place soon

~~Yours very truly~~

W. T. Tash

I may come out if
only for a few hours
drop in a line
on receipt of this
and in general whenever
you find it convenient
as the days here are
very long.

To-morrow I expect
to receive my friend
R
Lucy
N. T. etc.

The Waldorf-Astoria
New York.

April 29, 1906

Dear Mr. Schuff,

In thanking you
for the express which reached
I find that the
spot not penetrated
was about in the
middle portion. The
air was very low
the fact that the

Her usual that the
last one to be sent
new paper for correspondence
will have picture on top
made return to address
T. Laboratory, Long Island City, N.Y.
The envelope I shall have
printed return to do T.
Waldorf. Then because of
very few letters will be
returned as it has been
it is better to get them
here. That will give the
benefit of a good address. It
will be direct.
T. Laboratory. Sincerely

The Waldorf-Astoria
New York.

May 1, 1906

Dear Mr. Schuff,

I just received your
letter of yesterday.
About the pictures have
been sent. I have been
very busy and could not
get away as this is
my will
The pictures have been
sent. I have been
very busy and could not
get away as this is
my will

The Waldorf-Astoria
New York.

April 29, 1906

Dear Mr. Schuyler,

In thanking you
the express which reached
I find that the
spot not penetrated
was about in the
middle portion. The
was also very low
the fact that the

I may care not if
any for a few hours.
Keep in a line
on receipt of them
and in general whenever
you find it convenient
in the city's hands
very long.

To-morrow I expect
to leave my friend
R. L. Lacey
N. York

The Waldorf-Astoria
New York.

May 1, 1906

Dear Mr. Schuyler,

I just received your
letter of yesterday.
Glad the printers have
got it in hand now.
I am sincerely anxious
to get away and thus in
my mill
The package shipped

Her usual that the
last one to be got
new paper for correspondence
will have pictures on top
and returned to address
To Laboratory, Long Island City, N.Y.
The envelope I shall have
printed when to do it.
Waldorf. The income of
my for last year has
returned and is that case
it is better to get them
here. That was from the
receipt of a good address, but
from now will be direct.
Laboratory. Sincerely

The Waldorf-Astoria
New York.

April 29, 1901

Dear Mr. Scherff,

In thanking you
for expressing much
I find that the
spot not penetrated
was about in the
middle portion. The
wire above is only
the part that remains

I may come out if
only for a few hours
drop in a line
or message of this
and in several others.

~~My heart is~~ ~~crushed~~
~~as the days have~~
~~very long~~

To a mother I express
Love by her

R

Lucy

✓ Tish

The Waldorf-Astoria
New York.

May 1. 1906:

Dear Mr. Schuyler,

I just received your
letter yesterday.

Glad the papers have
replied to your letter.

They are already answering

you every one of them.

I will

The Pennsylvania

and Baltimore, Md.

11th

He resolved that the
best way to get
new paper for correspondence
will have to do on his
hand which is addressed
T. Laboratory, Long Island City, N.Y.
The envelope I shall have
prepared when he is in
Washington. This business only
very few letters will be
addressed and I shall care
it is better to put them
there. That will prove the
benefit of a good address. It
correspondence will be directed
to Laboratory. I must
write

I was very much
interested in the
report on the
or results of the
ad investigation.

Dear Mr. Schuyler,
I am very much
interested in the
report on the
or results of the
ad investigation.

The Waldorf Astoria
New York.

April 29, 1906

Dear Mr. Schuyler,

I am very much
interested in the
report on the
or results of the
ad investigation.

Dear Mr. Schuyler,
I am very much
interested in the
report on the
or results of the
ad investigation.

The Waldorf Astoria
New York.

May 1, 1906

Dear Mr. Schuyler,

I just received your
letter of yesterday.
I am very much
interested in the
report on the
or results of the
ad investigation.

The Waldorf Astoria
New York.
April 29, 1906
Dear Mr. Schuyler,
I am very much
interested in the
report on the
or results of the
ad investigation.

Probably that you have
been very much
interested in the
report on the
or results of the
ad investigation.

The Waldorf-Astoria
New York.

April 29, 1906

Dear Mr. Schaff.

In thanking over
the express which made
I find that the
spot not penetrated
down about in the
middle portion. The
was also to the
the fact that the

The
last

The
first
the

the
the

copy
from

the
paper

and
each

the

the

the

9. 1906

made
the
traces
the
The
low
value

The position leaves that
last in that regard, sharp
The paraffin would bring
particular cases from better
than on the cables. Then the
appears the will be
the importance of delay
carrying the drying will
proceed through very
thoroughly, for it is
paper in just a big
novel the same cause
Such as I believe by

probably reach you today or tomorrow
The end.

the leaves that Beaver will
the region despite of higher rocks
can hold long point penetration
over the better than possible
ends the the front reasoning is
with to ascertain whether
of delay how they will
drying out before I can
very quickly that you
be left it have the best
a long condenser (oil) ready
may cause of suddenly then
I believe

for body
Bureau and I think
have something else

I may come out of
my for a few hours
drop in a line
or receipt of this
and in several others.

~~For further information~~
as the steps have been
very long.

To - ~~the~~ I expect
L. ~~letter~~ by Fred
R

Lucy

27th

The Waldorf-Astoria
New York.

May 1. 1906.

Dear Mr. Schuyler,

I just received your
letter of yesterday.

Glad the pictures have
arrived in New York.

They are splendid indeed.

I get every one of them.

My wife

The pictures shipped

and will

probably reach you to-day, or
to-morrow.

The conclusion (perhaps) is
that probably not shown
as I have made all
the necessary arrangements.

from thoroughly. Then
I have taken a few days' leave.

The fact that it is
the same as the other is
that it is all right. You

I am quite interested to see
a lot of work when I am
I am out to-morrow. Perhaps

To-day I am meeting the
representatives of the colonies.

Today I came and I should
have something definite
(from) to tell you about the
how, by whom for covering the
work. I have been I hope
and they will be satisfied a
days back in the early part
of the summer of 1901 and can
give the date of payment.
I hope you do not yet see
me. I have received the cable
and I am astonished as it was
shipped 21. April from
the Port Antonio, which is very

Monday

N York

After reading that the
last one to be sent
our paper for correspondence
will have picture on top
and value and address
Laboratory, Long Island City, N.Y.
The envelope I shall have
written value to it J. C.
Wash. D.C. Then because of
my few letters - and the
value and that case
it is better to get them
here. That was from the
benefit of a good address, the
envelope will be direct. The
Laboratory, Long Island City, N.Y.

from a ...
 sent to ...
 a few days ...
 that the ...
 the ...
 take you ...

during a ...
 of the ...
 brought to see how it
 was ... the ...
 it would be very good to
 include the ...
 the ... of ...
 to be ...

The Waldorf-Astoria
 New York

May 3. 1906.

Dear Dr. Scherff,

I left a note
 on your desk with
 reference to the ...
 secondary ... and ...
 answers to be ...
 note was all ...
 father. Hope you will
 note carefully when
 the Secretary ...
 through to ...

My impression on the
seat. Very liked it
both down because the
paraffin has flown
out of it. Then we
shall prevent in the
new units.

The brush is a cheap
and 2 of the
is exposed with
this afternoon. I have
also ordered new paint
dark color for top of
lower platform. It will
be get them

couple of days.
I do not know
I shall go to R. today.
The atmosphere is not
right. There is a panic
standed in hundred 200.
This is due to the scare
came

The price
on oil in spec
manage next Friday the
to tomorrow. I believe
it will be in
the

The Waldorf-Astoria
New York.

May 3. 1906.

Mr. D. Scherff,

I left a note
on your desk with
reference to the two
secondary coils, 2 cm.
diameters to be used
with wax core to-
gether. Hope you will
note carefully when
the secondary is broken
through so that it

My impression is the
not very likely it
broken down because the
Josephine has flown
out of it. There are
three present in the
her crib, The
The track. No - 8 days. This
2 of them
are exposed in the
this afternoon. I have
also ordered new paint
dark color for tops of
lower platform. It will
be get them

the
it
I do not know what
I shall go to the bank
The atmosphere is not
right. There is a peculiar
stagnant and humid 20°
This is due to the sea
 breeze
The pressure is low
on all the species
message Friday the
is tomorrow. I believe
that it will be more
right to call the weather

from as much as
will be better in
a few days so with
that the shortening
the shortening
the shortening
the shortening

clearing a little from
of the old with
brought to see how it
will stand the heat
it will be very good to
uncover the layers of
the earth if it does not
be to find some

W. Taylor

Old

1

reference
occurs
clear
will
further
note
the
the

414720 19. inches for
12 lbs at 12.50
50 lbs $\frac{50}{12} \times 414720$

= 1728000 19. inches.

Cost of our sheets has

$6\frac{1}{4} \times 3\frac{3}{4} = 23.4444$

We shall get 172800

say $\frac{12 \times 12 \times 12 \times 1000}{2 \times 12} = 72000$

12 sheets each time with

some pressing into form 500

import sheets for order. The

sheet was 3000 papers per order. The

consequently we have for 24 orders

the same cost of conversion.

The Waldorf-Astoria
New York.

May 3. 1906

Dear Dr. Schieff,

I have ordered for

the same size as 50 lbs

paper (per sheet) 1000

1000 from after careful

thought the less ordered

to no defect. I propose

to use 6 or seven

building

consequently we have for 24 orders

the same cost of conversion.

Cost of paper about
\$6.00 per 1000
instead paper at 0.25
the less cost
you will have place
for in the book
for dig booklet and
having one book of
I can have paper in
by right position. We
may find that we
can not ourselves

[illegible]

What I have learned
of the U. S. Paper Co
they are a very
important factor as
in a publication
is covered

P. 1. 1] not
 $6\frac{1}{4} \times 3\frac{3}{4}$ 2
 I received 2 yds
 and $3\frac{13}{16}$ under $3\frac{3}{4}$.

The Waldorf-Astoria
New York.

May 3. 1906.

Dear Mr. Schieff,

I have ordered from

the American Co 50 lb

paper (partially) returned

by them after careful

examination the paper appeared

to be perfect. I propose

to use the same

paper but a bundle

of the same is still

type for a basket
of seeds, for the use
have about an in
the exact definition
with the enclosed.

Dr. J. H. Brown
Agent

Dr. J. H. Brown

A. A. Brown

Mr. Brown

Mr. Brown

Mr. Brown

Mr. Brown

lastly and he at con
all pass the sheets
lightly and soon
in a cap of
it and have been better
to see. Remember but
they say that it is
very difficult to
handle any. They have
several horns and
faded.
The grain I noted
will grow about
(according to selection)

Cost of paper about
\$6⁰⁰ ~~have~~ per

instant paper \$0.25

the little reach

You in have place
for in the back
for dry husband &
having one roll of

I ~~copy~~ ~~some~~ paper in

by right position, we

my find that we

can not ourselves

What I have learned
 of the U. S. Paper Co
 they use a very
 important process as
 far as papermaking
 is concerned.
 many

T. S.

P. S. I noted paper
 $6\frac{1}{4} \times 3\frac{3}{4}$ It
 I received 2 yds of
 and $3\frac{13}{16}$ with $3\frac{3}{4}$

not any more for the
 hope the furniture
 will be pretty nearly
 through the back
Important the condenser
 back to make a
 that of
 the iron pipe
 out a full size
 length of an inch
 otherwise the box will
 not fit into the case
 iron case
 Yours
 A. T.

The Waldorf-Astoria
 New York.

May 10, 1906

Dear Dr. Schull,
 I had expected to
 come out again but
 but I am sorry that
 it is impossible. I will be
 here Saturday. I will
 have with me Dr. P.
 when asking him
 deliver the course which
 according to the
 must be revised then

plan just as I left. Could they be making
The business a proposition. It is
a heavy industry if it is placed
all I know about the industry.
so far as the The Province people expect
million he has referred to giving me his
to be by ~~an~~ instruments study,
15 of course

I still am very pleased but just to see
(That is what we are to do the
from his office and personal writings
over the phone), and adjustments. Before
shows as he suggested I get one of those
but some wireless new machine I can

When I left.

The business is
very interesting.

All I have about
so far is that the
business has been referred
to by another
person.

I shall be very pleased
(That is what one
from his office said
over the phone), I
thought as he surprised I felt
but some wireless new

... as I left. Could they be making
... a proposition. It is
... if all of pleasure
about the particularly.

The person people agree
to give me the two
... Saturday,

... of course
... to enable

... the
... changes
... adjustments. Before

... of these
... new machine, I can

not only make for cheap
hope the printer
will be pretty near
through this week

Important the condenser
make 2
that edge of
the box
out a full six
length of an inch
otherwise the box will
not go into the cast
iron base

Lucas

W. T. Lee

Des
Am
but
at in
here
from
Palm
deli
a card
most

In heating the compound
 to 270°C we can see
 to expect all water
 hence the dry process
 is very efficient and
 not too tedious. When
 the water is thoroughly
 removed we can
 then use the compound
 for the purpose. Please
 note this experiment will
 be of great value to the
 Science of Textiles

P.S. Dr. Warr has written y—
 See that you comply with his
 The Waldorf-Astoria
 New York.
 New York
 May 11, 1906
 Dear Dr. Scherff,
 Your letter just
 received.
 As I have told you
 before
 I am sorry to hear
 of the boiling process
 is about the melting
 point of lead. The
 metal just

360° C whereas Perappa proposed to modify
boiling at 370° C. The heat treatment is
is different with Pusina & way which will
it boils at 108° C. overcome their difficulty
we can in an effort and some good deal
heat the paper with of (round) This heat-
less but not much in the way
I suppose. I would like to roll it
we would use steel paraffin. This should
at a pressure of 150 lb be done outside
- would come out half of building. The
way to the building rolls should be put
of Perappa.
In view of this I am upright position

from
some
the
room
and
when
my
D
the
one
club, as
Passage
time -
this
ask

P.S. to Walter has written y -
See that you couple will be
The Waldorf-Astoria
New York.

have ordered
more print
May 11, 1906

Dear Dr. Scherff,

Your letter just

received.

I have told you

the
the
the
the

club, as it is built by money

Passage is shown from meeting

point of land. R.

metel

enclosed

160° C whereas Paraffin
boils at 250° C. It
is different with Petroleum
it boils at 108° C
We can in our apparatus and
boil the paraffin with
less but not
Petroleum
we would use steam
at a pressure of 150 lb per
square inch come out half
way to the boiling
of Petroleum.
In view of this I am

... Perhaps from to modify
C. K. The ...
Russian ...
108°C ... a way which will

... overcome their difficulty
and ... feel that
of trouble. This ...
... be ...

... work ... rolls ...
... 150 lb ... This ...
... help ... outside ...
... of building ... The

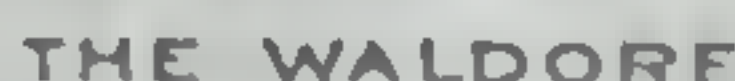
... rolls should be ...
... upright position

In heating the compound
 to 270°C we are seen
 to capture all ~~water~~
 hence the dry portion
 is our ~~effluent~~ and
 we are ~~seeing~~ when
 the ~~water~~ are ~~thoroughly~~
~~removed~~ as ~~cond~~
~~water~~

P.S.
 See
 How
 more
 clear
 the
 water

I propose to use some
 of the small ~~condensers~~
 for the purpose. Reason is
 that this ~~expensive~~ ~~inter-~~
 mediate ~~recapitulating~~ the
~~process~~ ~~of~~ ~~the~~

the
 water
 the
 water



THE WALDORF-ASTORIA, NEW YORK
THE BELLEVUE-STRATFORD, PHILADELPHIA

The Waldorf-Astoria.

Ashtoria, *May 14 1906*
New York

Der L. Schenk,

I was of the exploring party. The
 which showed some bones
 the shore was very strong in shell fish.
 Hope my bones will not be subjected
 upon the same level.
 them found a simple way of finding
 the coast with shells. But it will be
 quite safe against breaking through. I
 expect to bring out a model of the
 the sea can be seen. The shell is very
 shallow and large in the water. The
 of the

Carl, please write L.C. (a)
 from a Chicago address by
 name. I am in capital
 I am in capital. Says he
 he will be coming necessary
 though that you have been
 able to get some things
 The old man then should
 be present at any time
 There is a possibility that
 he will be able to come out
 he has been in the city
 the place so that he may
 have a good look at the
 Carl Schindler, with 22. I
 have \$100 to last night.

The advertisement is to be printed
 in the New York by
 The Waldorf-Astoria
 New York.

May 11, 1906

Dear Dr. Schindler,
 I expected to go out
 morning Friday but
 it seems better to
 wait until Saturday
 morning when I shall
 be able to take
 along the new machine
 (which is ready) with me
 during my stay in
 New York as per usual.

fully adopted. I
bought the changes for
Civil War in my last
or before last trip. I
will change the work
to you with reference
the paragraph paper in
the book the paper
of any other thing
necessary for working.
I am not quite sure about
the title of work as that
depends on the evidence.
will decide by the time

I got them Saturday.
The papers are full
of the Court and as
expected. We don't
know yet whether
the Supreme Court will
grant change of venue.
It will probably be
decided by Saturday.
Have what seems a
good news. Mr. Sharvord
wants to take up
my shoulder. something
such as this type of

The Waldorf-Astoria

New York.

May 11, 1906

Dr. Schuff,

I expected to go out
morning Friday

It seems better to
wait until Saturday

morning when I shall

be able to leave

along the river

and will be

going to the

residence

and adopted. I
bring the matter before the
Court on my last
or before last trip.
The Chairman of the
Committee will prepare
the proposed program
and the Chairman
of any other thing
necessary for making
I am not quite sure about
the date of the first
depends on the calendar
will decide by the time by
the

I got them Saturday.

The papers are from
of the Court and sent as
I expected. We don't
know yet whether
the Supreme Court will

make change of venue.

It will probably be
decided by Saturday.

Have what I can

from news. Mr. Sherwood

wants to take up

my mother's movements

and is this type of

Coal, you can't get it
from a Chicago man by
name. He's a capital
I am convinced. Says he
he'll do all the mining necessary. That
they don't for him but
ask him for some help.
The old rule that should
be followed is to get coal
There is a possibility that
the old rule will come out
also for an idea of
the place so that he may
have a good idea. He has
the 100 coal right. But he's
lost Sunday with 223. If
he's 100 > coal right.

very good. I am
 expect to see the paper
 I can see I can
 but see how I can
 find that here now on
 the envelope as the
 change takes place
 July 1.

Lenny

to Park

The Waldorf-Astoria
 New York.

May 20, 1906.

Dear Dr. Scherff,

I think you will
 find the short circuit
 in the cord we are
 in for as I can see
 it can not be in
 the wire.

Sincerely
 Lenny

Lenny

to come to the

person at the end of the pipe. The primary for oil.
The bottom is very light. The pipe will be very light on a
be checked up somewhere. I hope you
or else the well will be able to do
opening in the well. It is the I may
lateral in the well, but can last the
the well be well covered. I cannot out.
The man has the pump. No more of the
(200 lbs). Tell him. No more of the
to do this before. No more of the
the Indian. When can you get of little -
be come to - summer else. He loves

The Waldorf-Astoria
New York.

May 20, 1906.

Dear Dr. Scherff,

I think you will
find the short account
in the book as said
as far as I can see
it can not be in
the market.

Respectfully,
George F. [Signature]

[illegible]

... said
... near
... The ditch
... The primary for mile
... later should be around
... light on
... somewhat. I hope you
... will be able to do
... it so that I may
... before I look then
... I am out.
... hear of the
... but I
... proof of letters -
... lead the course

My friend, I am
happy to hear the
D. envelope, I am
not sure how I can
find the new name on
the envelope as the
change takes place
I am

Very

Yours

has arrived the same as before



New York May 28, 1906

Dear Mr. Scherff

This is the first steel received from the Detroit T.B. Co. The cut seems to be fairly good. At any rate this change of stationery is agreeable to me.

Dr. Sherwood writes that subscriptions for his brand of transformers are coming in all right.

The Peace people will finish

our hundred secondary spools by
L-romer so that you may expect
them Thursday next.

I have now fully developed a
scheme for winding and simple
beatnet shell. I think I can
not improve. The new winding
will not break down I am
sure and very stupid. by can
be used to do the work.

To-morrow I shall be again
for my friend R. but day after
I will be at home hoping that
you may have the paper for the
Condenser on hand.

Trueman

N. T. Parker

7
had some conversation
over the phone with a
man who promised to
see me as soon as
possible but up to
present nothing has
materialized. It is perfectly
clear to me that if I
am to get a capital
I can only get it from
some fellow who has his
eyes on his billions.
Hoping for the best
Sincerely yours
N. Tilden

The Waldorf-Astoria
New York.

Nov. 20. 1907

My dear Mr. Schaff

I enclose please find
documents I received.

Tell Mr. Mc Cleen that

I consider him an
ideal corporation lawyer.

As to bringing books

up to date at my

perhaps he be necessary.

I hope you will be

family are well. Looking after business it seems,
the business is being almost impossible to
run. There is simply no money at
all. The situation here.
unfamiliar lines. I can not
understand it all how
Americans who are so
daring and reckless in
other respects can get
scared to such a degree
by ship propulsion when
it really is great. I have
studied it out in all
details and feel
sure that it will pull
me out of the hole. But
how I do not seem.

but make conditions
which I am unable
to meet for the
present. If I had
just a little capital
I would be working about
something by plan.
My friend J.J.A. has

The Waldorf-Astoria
New York.

Nov. 20. 1907

My dear Mr. Scharff

I have pleasure in
documents I received.

Tell Mr. Mc Cleen that

I consider him an

ideal Corporation lawyer.

As to bringing books

up to date is my

perhaps not necessary.

I hope you will

family are well. Anything
the business is going
now. There are simply
awful lines. I can not
understand at all how
Americans who are so
daring and reckless in
other respects can get
scared to such a degree
by ship propulsion when
it really is great. I have
studied it out in the
details and feel
sure that it will put
me out of the hole. I
know I do not mean.

... saying yes because it seems,
... being almost impossible to
simply receive any money it
can not be. The Int. there.
how business is by best
so customer and they
are certainly interested
for but when conditions
degrade which I am unable
when to except for them
I have present. If I had
the just a little capital
feel I would not worry about
pull something by plan.
... By fund T.T.A. has

7
had several conversations
over the phone with him
and has promised to
see me as soon as
possible but up to
present nothing has
materialized. It is perfectly
clear to me that if I
am to get capital
I can only get it from
some fellow who has not
less than 100 millions.
Hoping for the best

Sincerely yours

V. T. T.

The Waldorf-Astoria
New York.

Dec. 12 1907

Dear L. Stett,

Replying to your letter
just received your testimony
is of course to the point
I shall send you copy
and I trust you will
be able to have the address
of Dr. Mac Aleer.

I have made a little
progress and hope the
same for you.

The parties seen
to be well represented with
3 propounders scheme and
it looks as though the
of them (but H. H.) will
furnish the substance for
a practical experiment.

Mr. Crawford will be
back early next week
and I have reason to
believe that he feels better
now and will let me
do it with the contact.
I called up H. H. re-
saying to him from his answer

I am satisfied that
H. H. has the same high
vision of me. He understood
that we started. That
pieces are hard to
was really thinking the
opposite.

H. H. has sent me a
letter from a electrician
saying that it is
stated that there is
a machine in the
country. It is curious
that by friends have
personal and communication
Sincerely yours

The Waldorf-Astoria
New York.

Dec. 12 1907

Dear Mr. Schuff,

Replying to your letter
just received your letter
of course to the point
I shall send you copy
and I trust you will be
satisfied with the result
of the same.
I am very glad
to hear that you are
well and hope you will
continue to be so.

... and ... further ...
... will ... with ...
... preparation ...
... looks as though ...
... (I) ...
... the substance for ...
... practical experiments ...

Mr. Crawford will be off
and ... next week ...
... I have reason to ...
... that he feels better ...
... will let ...
... with the ...
... I called up to ...
... day ... from his ...

I am satisfied that
 he has the same high
 opinion of me. He entertained
 them as stated. That
 places are hard as I
 was really thinking the
 opposite.

I, Herbert West an
 letter from a electrician
 to - by in which it is
 stated that the same is
 the the problem is by
 invention. It is curious
 that by fixed have
 present and communication

Tracy



Scherff
134 Street
New York
George
897

The Waldorf-Astoria
New York.

March 23 1908

Dear Mr. Scherff,

We signed the day agreement
relating to the electric light
but there was a delay in the
whole proposition. I have
no doubt that the business

company

few days
I am hard at work on
the little instrument and hope
to have it complete sometime
next week when the good work
can begin.

S.S.

I suppose Saxe is on
the way out now.

Sincerely

W. T. Hall

The Nassau-Historia
New York.

March 23 1908

Lea H. Schaff

He signed the day agreement
relating to T. & Co. & Co. & Co.
and there was a delay in the
the. I have
proportion
the business

Chrysomelidae

100

I am hard at work on
 the little instrument and hope
 to have it complete some time
 next week when the good work
 can begin.

d. r.

d. s. Tracing
I suppose Saxe is on
the warpath now.

George Scherff
877 134 Street
New York

11.1.11



New York, July 1, 1908.

Mr. George Scherff,
C/o Union Sulphur Company,
82 Beaver Street, City.

My dear Mr. Scherff:--

Thanks for the trouble you have taken in attending to the
company matter.

As to fans or anything else you may need, I shall be
glad if you will help yourself as though it were your own. You
only need to write Mr. Hawkins and select what you want.

Sincerely yours,

N. Tesla



165 Broadway, New York,
February 19, 1909.

George Scherff, Esq.
Union Sulphur Company,
82 Beaver Street, City.

My dear Mr. Scherff:--

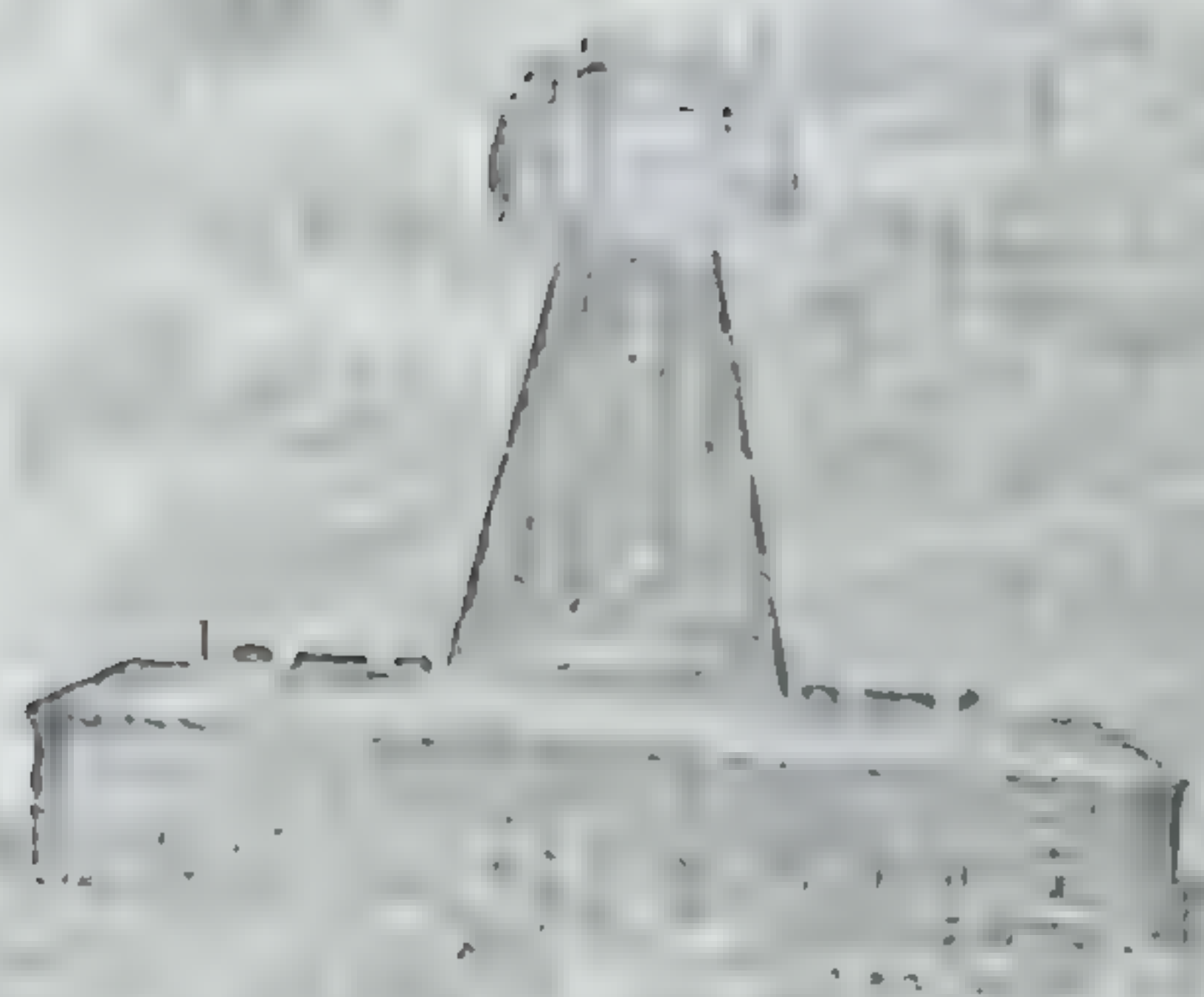
I am sorry to learn from your letter just received, of the illness in your family, but I hope that nothing serious will develop.

Your faith is certainly firm when you say that you expected confidently the payment. I had the idea that your advancement in the company was such as to free you of all troubles.

My progress is slow but sure. We have demonstrated that my water turbine is of very high efficiency, having shown 96% in a recent trial. The steam and gas turbine have both been practically carried out and promise to be revolutionary improvements. We are just completing a blower on the new principle driven by one of my induction motors. This will be a commercial machine. I am now at work on new designs of an automobile, locomotive and lathe, in which these inventions of mine are embodied and which cannot help prove a colossal success. The only trouble is where and how to get the cash, but it cannot last very long before my money will come in a torrent, and then you can call on me for anything you like.

Yours sincerely,

N. Tesla



TESLA LABORATORY
LONG ISLAND N.Y.

165 Broadway, New York,
February 19, 1909.

George Scherff, Esq.
Union Sulphur Company,
82 Beaver Street, City.

My dear Mr. Scherff:--

I am sorry to learn from your letter just received, of the illness in your family, but I hope that nothing serious will develop.

Your faith is certainly firm when you say that you expected confidently the payment. I had the idea that your advancement in the company was such as to free you of all troubles.

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Yours sincerely,

N. Tesla

George Scherff
Union Sulphur Company,
82 Beaver Street,



165 Broadway, New York,

Nov. 26th, 1909.

Dear Mr. Scherff:

Thanks for your letter. I believe indeed that I have overcome all resistance and that from now on, progress will be steady. In a few days, you may hear of developments which I mentioned to you a few days ago.

I will be much obliged to you if you will advise the Hawkinses in regard to the steps necessary towards fixing papers on their behalf. I have the kindest feelings for them and want to have everything right and satisfactory.

If you have not seen the enclosed, it will interest you.

Yours sincerely,

N. Tesla

George Scherff, Esq.,

82 Beaver St., New York.



10 Broadway, New York,
Jan 11st, 1910.

My Dear Mr. Scherff: -

I was unable to reply before this to your letter as I had to go out to Bridgeport where we have some important work going on. We have just undertaken to furnish one of my turbo-pumps of 450 horse power for a pumping plant near Buffalo. In the near future, I expect to give myself the pleasure of taking you out and showing you some of my machines in operation.

I do not think that there is any possibility of you ever sustaining a loss whether you had any documentary evidence or not. At least, I understand that claims such as yours would receive preference over any others. I am forwarding you, under enclosure, documents and would be obliged to you if you will let me know the number of shares which have been pledged in each case. I have no record before me at this writing but you probably must have it.

Yours sincerely,

W. Teak

John Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.

10 Broadway, New York,
Jr. 31st, 1910.

My Dear Mr. Scherff: -

I was unable to reply before this to your letter as I had to go out to Bridgeport where we have some important work going on. We have just undertaken to furnish one of my turbo-pumps of 450 horse power for a pumping plant near Buffalo. In the near future, I expect to give myself the pleasure of taking you out and showing you some of my machines in operation.

I do not think that there is any possibility of you ever sustaining a loss whether you had any documentary evidence or not. At least, I understand that claims such as yours would receive preference over any others. I am forwarding you, under enclosure, documents and would be obliged to you if you will let me know the number of shares which have been pledged in each case. I have no record before me at this writing but you probably must have it.

Yours sincerely,

et. Teak

John Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



165 Broadway, New York,
April 1st, 1910.

My Dear Mr. Scherff;

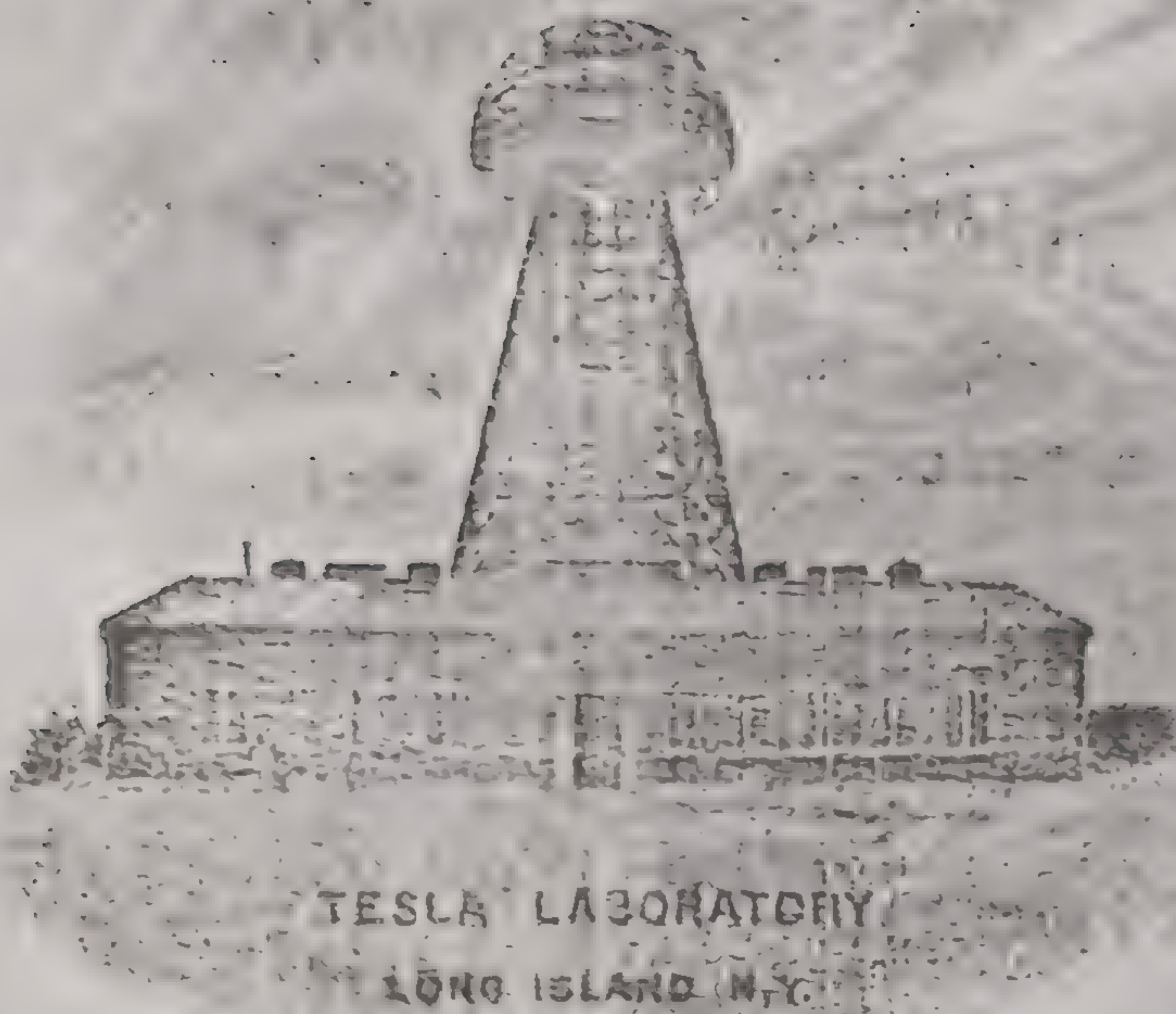
I have just returned from Bridgeport, where I tested my little turbine in the presence of several experts. The machine, to which I have referred in my previous correspondence, developed 93 horse power, which was considered a wonderful performance.

While I am satisfied that the evil spirit will not long bother you, I am afraid that on April 1st, he will have his way.

Yours very sincerely,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.



165 Broadway, New York,
April 1st, 1910.

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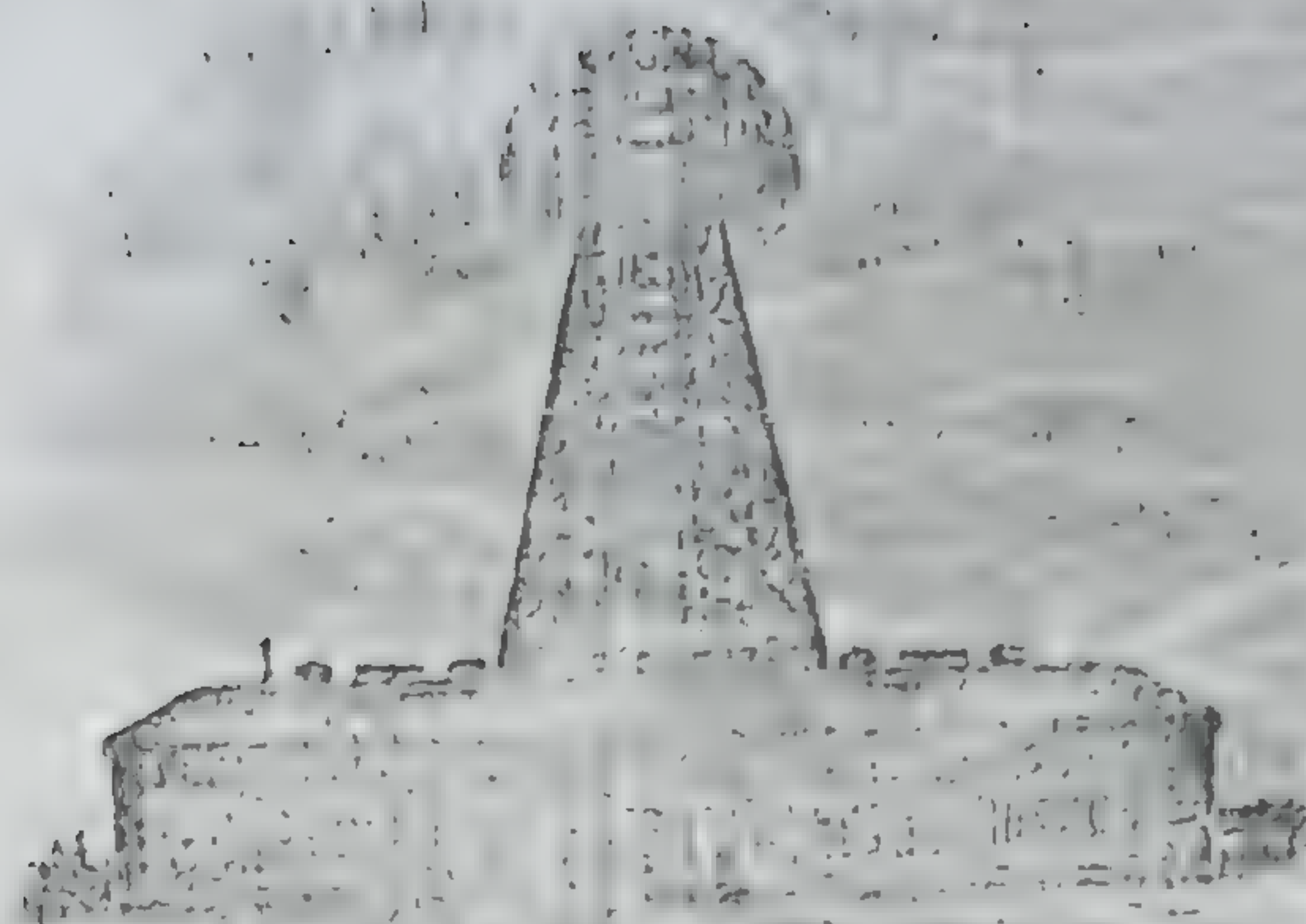
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83 Beaver St., New York.



TESLA LABORATORY

LONG ISLAND CITY

165 Broadway, New York,
June 6th, 1910.

My Dear Mr. Scherff;

The Journal of Commerce has been pressing me for a personal sketch which they want to publish. I have reluctantly promised to furnish it and would like you to help me out. I think that something like the one you wrote for "WHO'S WHO" a trifle enlarged to meet their requirements for space would do. I would be much obliged to you if you would do it at an early date.

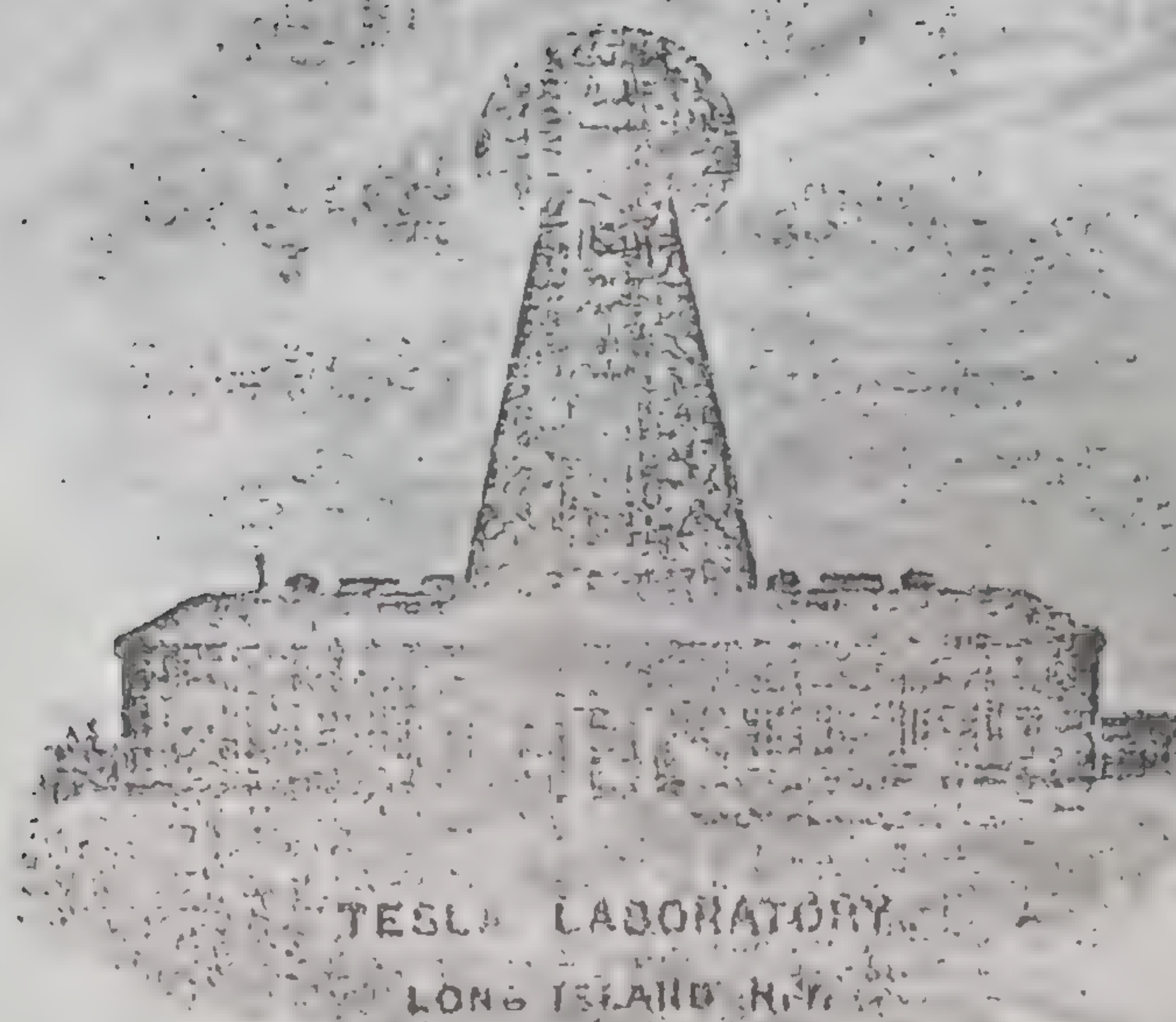
Since our last correspondence I have heard nothing from you and anticipate that Mr. Snider has not yet returned.

It will interest you to know that we have managed to put together the turbo-pump on Saturday but it is not yet in definite shape. However, it will be in running condition before the end of this week and I trust that my expectations will be realized.

Sincerely yours,

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N. Tesla

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82 Beaver St., New York.



10 May, New York,
A. 1916.

My Dear Mr. Scherff:-

I have duly received your letter of April 6th including a copy of proposed agreement with Mr. Lowenstein which shows evidence of your thoughtfulness and thorough knowledge of the conditions. On the whole, I think though that an agreement on these lines will not permit us to favor him without hurting in some way the other interests of the Company. In view of this, I shall be obliged to you if you will make an effort to devise some other form of contract which will obviate this difficulty. I shall think of the subject myself although I have little hope of arriving at a good conclusion.

Yours sincerely,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
33 Beaver St., New York.



10 ay, New York,
April, 1910.

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Yours sincerely,

et. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
83 Beaver St., New York.

165 Broadway, New York,
June 29th, 1910.

My Dear Mr. Scherff;

You called me up yesterday at an inopportune moment, otherwise I would have set aside other engagements to confer with you.

In order to save you unnecessary trouble, I will supplement reluctantly, of course, a few data to the article which you have written some years ago for the Harpers publication. It would only been necessary to change the wording somewhat, leave out some unimportant remarks and bring it up to date.

For reasons which you well appreciate, I would suggest that you mention the Elliott Cresson Gold Medal which was awarded me in recognition of the work presented to the Franklin Institute and National Electric Light Association in 1893, in which wireless transmission was one of the most important chapters. Another very important work which should be mentioned are my discoveries of novel radiations or emanations, which I published in a series of papers in the Electrical Review, New York, from 1896 to 1898 and which long after were identified with radium. As you well remember, I announced all the salient phenomena and gave the theory two or three years before anybody believed in the possibility until Madam Currie announced her discovery in which she virtually repeated what I had published except that she attributed the actions to a new element while I pronounced them as general.

In referring to my participation in Scientific Societies, Institutions and Academies, as honorary or regular member, it would be well to state that I am a life member of the British Association and a member of the Royal Institution, as these are probably the most renowned scientific technical institutions.

#2

George Scherff, Esq.,
June 29th, 1910.

In mentioning degrees, you will, of course, recall that I am an M.A. of Yale, an L.L.D. of Columbia and, among other things, a Doctor of Science of the Polytechnic School of Vienna. This distinction was conferred upon me in acknowledgement of my discoveries of the principles of wireless transmission and power.

The most difficult thing probably will be to bring the article up to date by reference to my activities since that article was published. You will know that several Companies have since been formed for commercial exploitation of various inventions. Among these unquestionably the most important is my discovery of a new mechanical principle which I have embodied in a great variety of machines such as reversible gas and steam turbines, pumps, blowers and air compressors, water turbines, mechanical transformers and transmitters of power, hot air engines, etc. This principle, among other things, enables the production of prime movers which can develop ten horse power for each pound of weight, if not more. By their application to aerial navigation, and propulsion of vessels on water, high speeds are practicable, and the results so far obtained are very promising.

At the proper place, you might also fittingly remark, since it is true, that I have a number of discoveries in the electrical field which have not as yet been announced but which I believe to be more important than any electrical work that I have so far done.

I am very sorry that I am compelled to make such statements on paper but I do so simply because I



#3

George Scherff, Esq.,
June 29th, 1910.

know that it must be told and in my desire to spare
you the trouble of coming here.

I am expecting to make some tests of the
large turbine tomorrow and hope that they will
be satisfactory as much depends on the issue.

Yours very truly,

Ch. T. T. T.

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.

165 Broadway, New York,
June 29th, 1910.

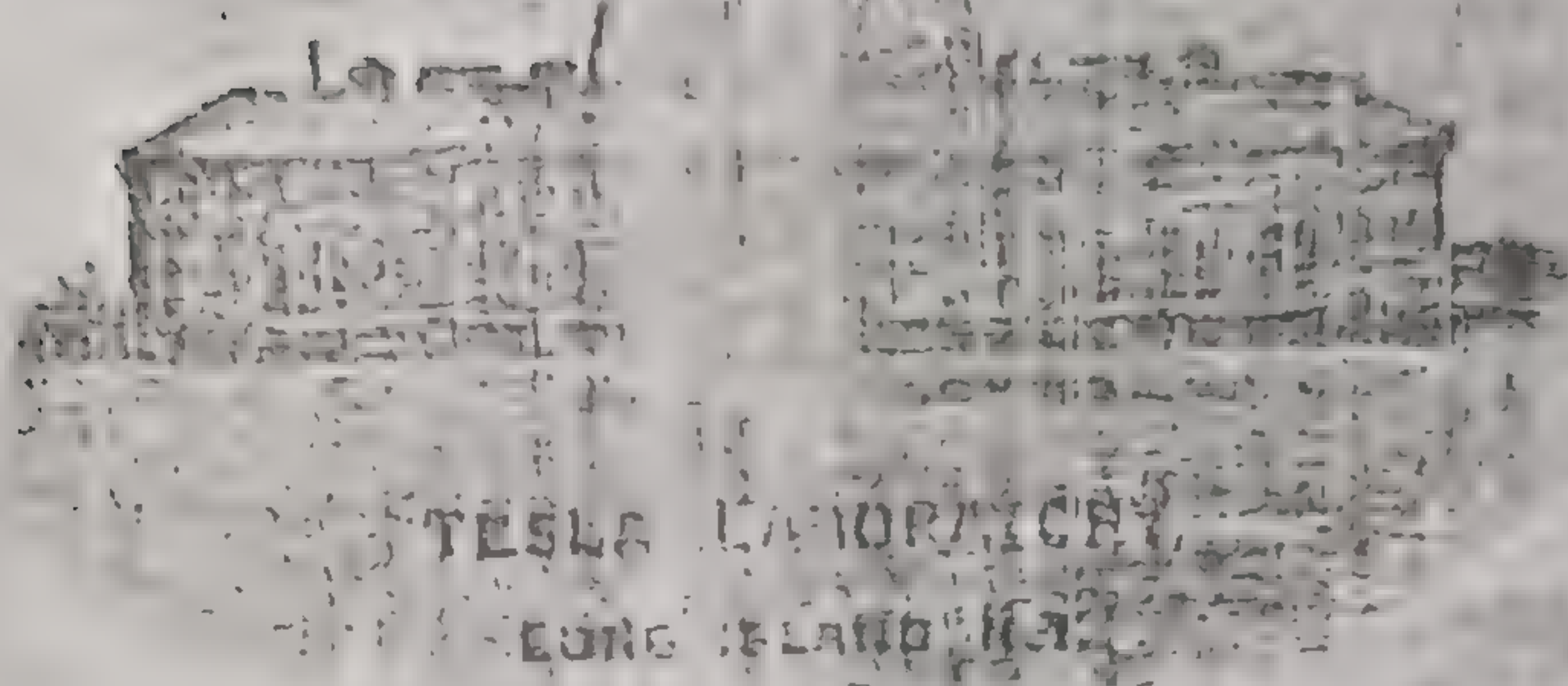
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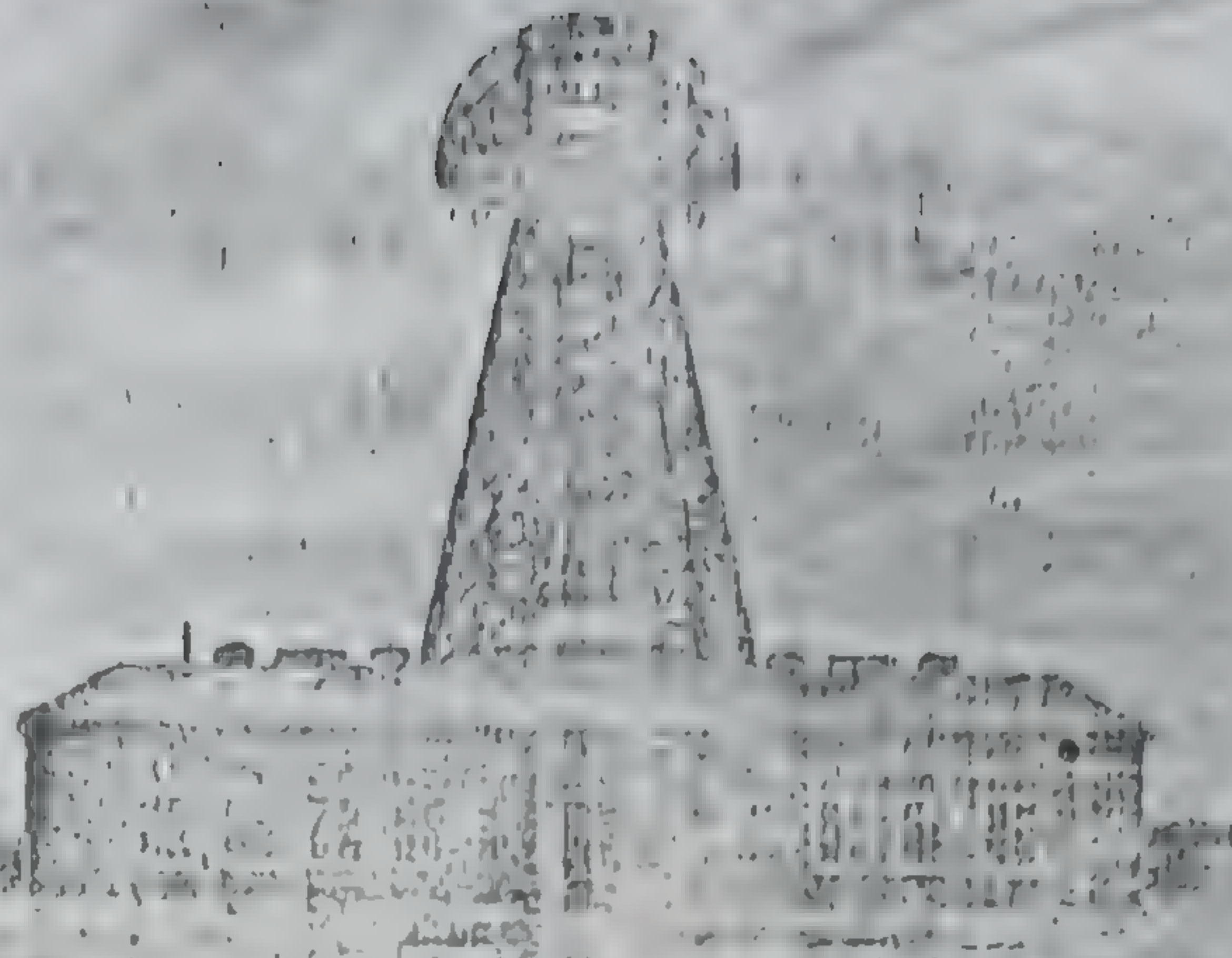
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Union Sulphur Co.,
82 Beaver St., New York.



TESLA LABORATORY
LONG ISLAND N.Y.

202 Metropolitan Tower,
September 7th, 1910.

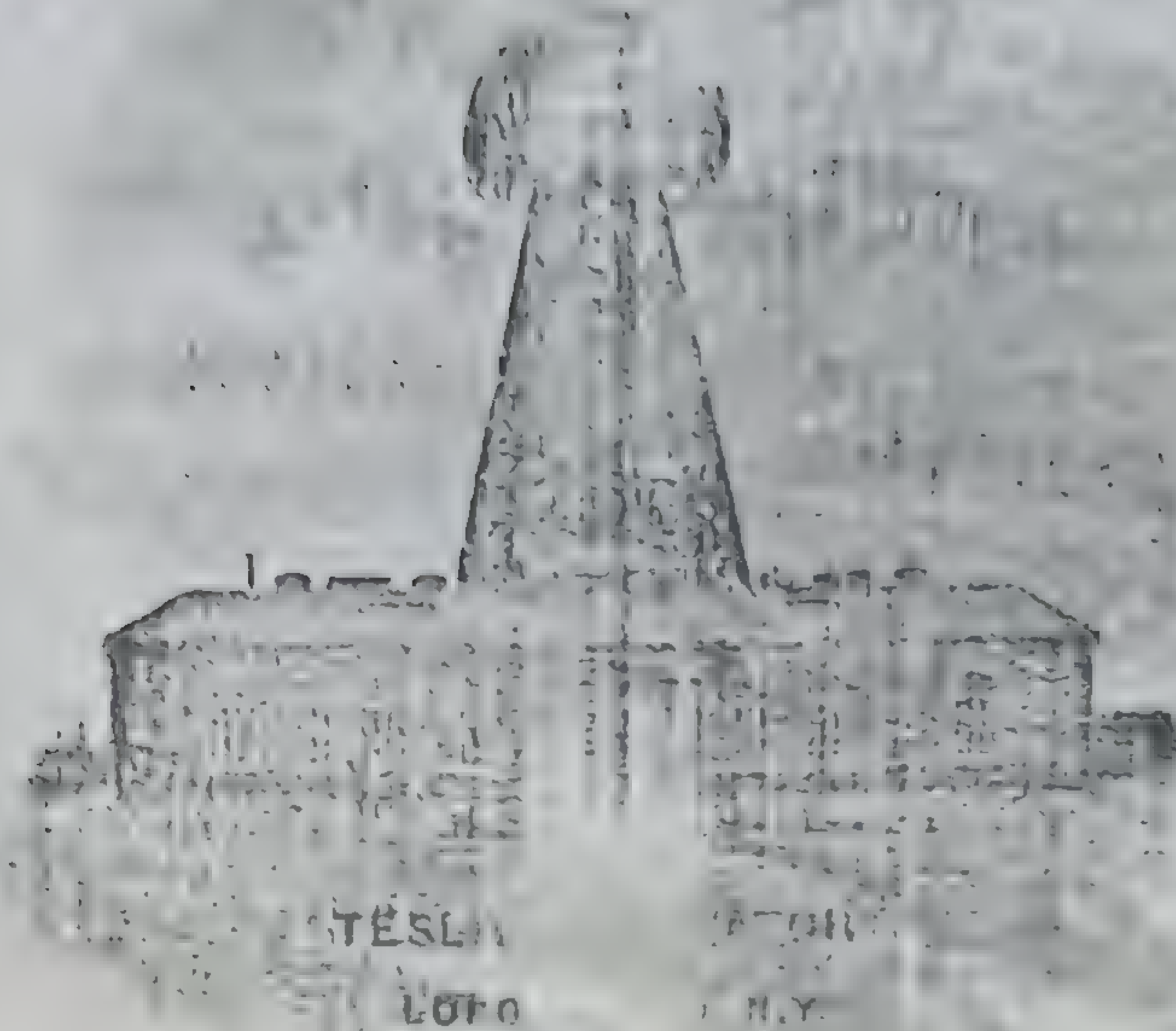
My Dear Mr. Scherff;

If it is possible for you
some day on your way up town, I
you in my new offices at 202 Metropolitan
Tower, as I have some things to tell you.

Sincerely yours,

N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



161 Broadway, New York,
July 11th, 1910.

My Dear Mr. Scherff;

We made a test with the turbo-pump Saturday last and developed an impressive little Niagara, 4' wide and 7" deep at less than half the normal speed. The quantity pumped was about 2600 gallons per minute and the height 80'. The pump part is evidently in good order but, I have yet to make some little improvements on the turbine before it is all complete.

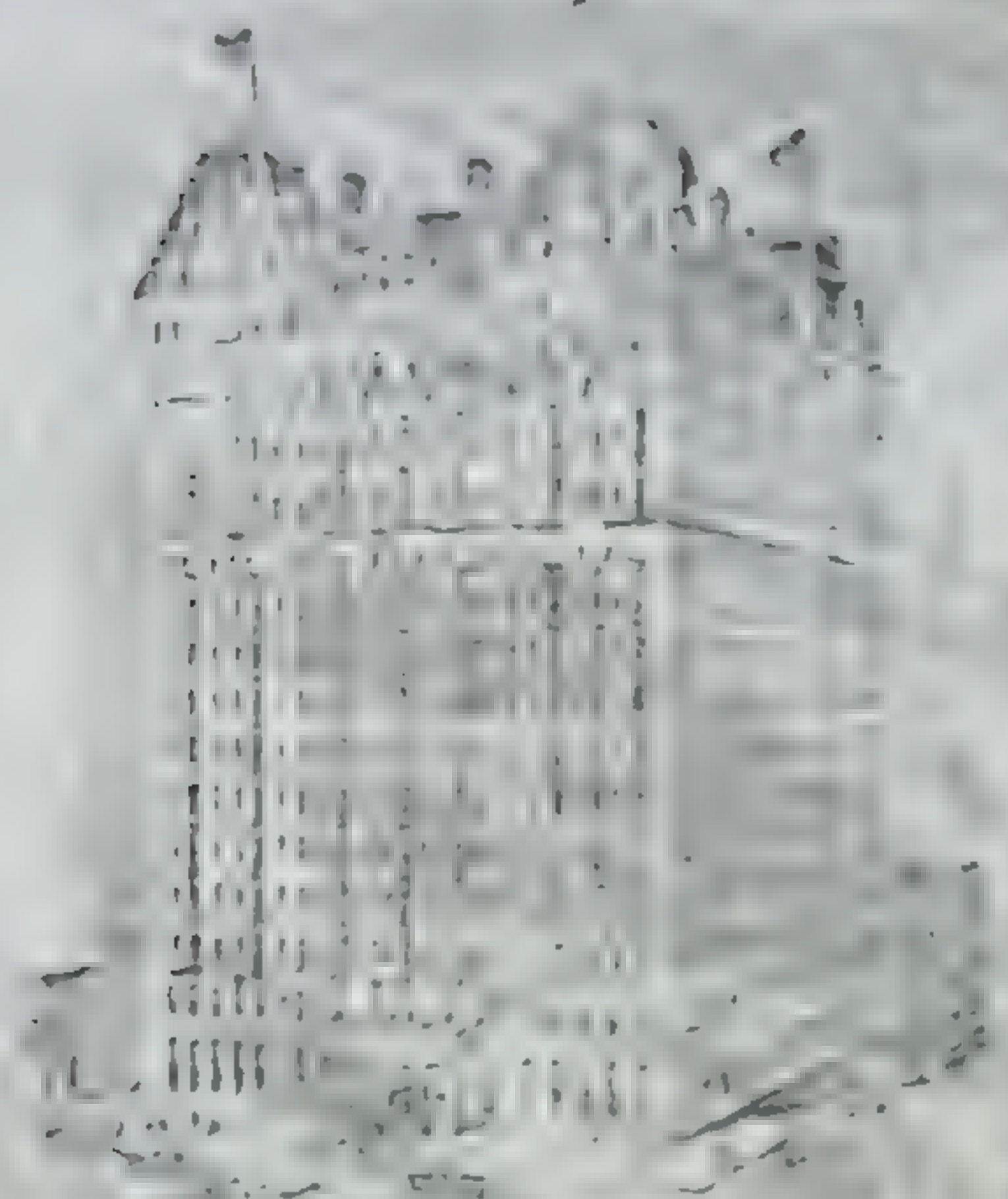
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N. Tesla

George Scherff, Esq.,
Union Sulphur Co.,
82 Beaver St., New York.



THE WALDORE



THE WALDORE



THE ASTORIA

The Waldorf-Astoria,

New York, June 9, 1915

Place St. G.

which in my turbine just received. It is
and some of my ideas. The author ignores however
which are of particular advantage when

two of my contributions which were each
spoiled by typographical

can not comply with your request as yet but
in sight. The stock of my Company will be very
while I am here. It is possible that I
in a little while. As to the
think best.

Yours sincerely

J. T. L.

unmistakable interest
in my foundation.
My letter about that

NEW YORK CABLE ADDRESS "WALDORF, NEW YORK"
 PHILADELPHIA CABLE ADDRESS "BELLEVUE, PHILADELPHIA"



THE WALDORF



THE BELLEVUE-STRATFORD



THE ASTORIA

THE WALDORF-ASTORIA, NEW YORK
 THE BELLEVUE-STRATFORD, PHILADELPHIA

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New York, June 9 1915

Place N. Y.

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 you think best.

Yours sincerely

N. Tesla

remarkable interest
 by foundation. I
 letters about daily.

Our finances were a little, the
expenses being heavy. I really do not know
how much of this I shall recover. The
balances are very low and as I do not
want to draw (for obvious reasons) on our
associates here - although they virtually make
the offer - I would like you to use
the bonds and make deposits equally
for the credit of both companies. I

prefer if you would deposit cash.
As I come to New York we
shall take the bonds back and subscribe
for more.

Please drop me a line by
return mail.

With best regards

Sincerely yours

George Scheiff Esq.
17 Battery Place

Ch. T. T. T.



September 25th 1917

My dear Mr. Scheiff,

Just a short statement in reply
to your letter received a few days
ago.

I did not encounter any
difficulties of moment, but very
important improvements have kept me
busy day and night.

As I mailed in a dispatch
of even date my latest construction

promises to be a colossal success. I can be advantageously applied to other
less developed many new features of mechanisms which I have since long
great commercial value. You will be contemplated to build. This will
pleased to know that my dynamic balancing is pushed vigorously as soon as I
secures perfect results even before return.
attained in any high speed machinery. In view of the pending large business
and I am expecting to get a good thing, as you know, should mature about
before covering the method which should the middle of next month, I think it
be worth a lot of money. The thing is advisable to stay here until then.
is virtually done away with and the Besides there are several other
capacity of the machine has been doubled, projects under consideration which
besides making it cheaper and simpler, may be carried out at least in a
There is every reason to believe that preliminary way. I am very anxious
the outfit will not require attention to have this matter definitely disposed
for a couple of years or more. What of as we can positively count (from
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commercial value. You will be con-
fessed to know that my dynamic telescoping
secures perfect results never before
attained in any high speed machinery,
and I am expecting to get a good third
patent covering the method which should be
worth a lot of money. The oiling
is virtually done away with and the bearing
capacity of the machine has been doubled, ^{pro-}
besides making it cheaper and simpler. ^{may}
There is every reason to believe that ^{pre-}
the outfit will not require attention to
for a couple of years or more. What of
is most important the advances made that

cess. I can be advantageously applied to other
mechanisms which I have since long
be contemplated to build. This work will
be pushed vigorously as soon as I
return.

In view of the pending large business
which, as you know, should mature about
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to have this matter definitely disposed
of as we can positively count (from
what I see) on one thousand packages a month

Our finances worry me a little, the
expenses being heavy. I really do not know
how much of this I shall recover. The
balances are very low and as I do not
want to draw (for obvious reasons) on our
associates here - although they virtually make
the offer - I would like you to use
the bonds and make deposits equally
to the credit of both companies. I

prefer if you would deposit cash. I
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for more.

Please drop me a line by
return mail.

With best regards

Sincerely yours

George Scheriff Esq.

17 Battery Place

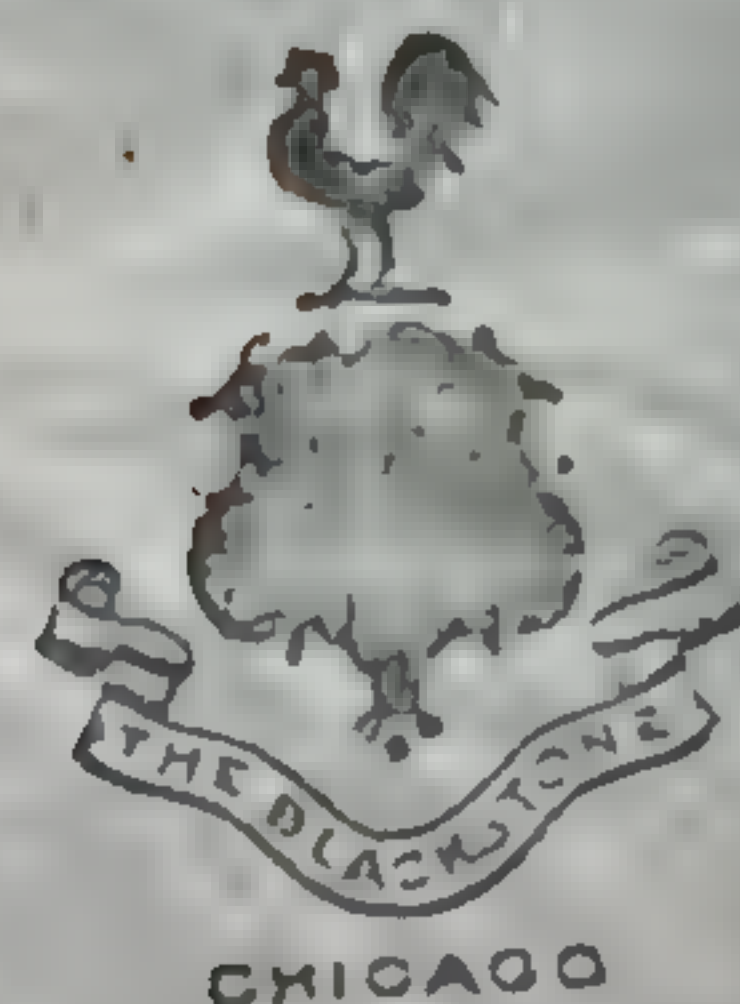
N.Y.

Ch. Tash

and - perhaps, if it is too much
of a surprise to deposit say \$200.00
for the account of J.C.I. This will
be enough to take it unnecessary
for me to raise the question of money
until I am through, when they will
naturally have to approach me in
the matter
Hoping to see you very soon with
many yours

Mr. George Scheff Esq.
17 Battery Place
(Union Sulphur Co) N.Y.

J. T. Tash



Apr. 7. 1917.

My dear Mr. Scheff,

You will probably understand that
it must have been business of the greatest
importance to keep me here so long
and spend so much money. The fact is that
the P.N.C. contemplates to stop the main-
tenance of their old machines altogether,
at least the manager told me so. Further-
more they are convinced that the forty
thousand headlights already sold will have
to be soon replaced as they
are unsafe and the railroad people

are raising the last other objection business if I am successful not to speak
against their use of other projects in connection. I am

Our business arrangements have been delayed until a demonstration is made before prominent officials on which orders of not less than ten thousand machines are being. The Company has also put on the market a 3 K.W. A.C. Lighting outfit and matters until then. I am anxious not to touch on finances
has an order for 500 of these but is hesitating. The funds in the Bank are
to proceed with the purchase in 1000 £ 7000 =
expensive to build and takes too much space claim for 1000 £ 7000 =
steam. My turbo generator of 5 K.W. would be wireless and also for an additional 1000
be barely one third the size and would save as compensation in the Palestine but
100 lbs. steam per hour. I have been it will take time to collect the and
working hard ~~but~~ persuading them to therefore we must depend on the facts here
adopt mine and think they will for the present. What I would want you
to do is to advance whatever their
As you see all this means big Skerritt will require Saturday next



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against their use.

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delayed until a demonstration is made
before prominent officials on which orders
of not less than ten thousand machines are
hinging. The Company has also put on the
market a 3 K.W. R.R. Lighting outfit and has
has an order for 500 of these but is hesitating
to proceed as the machine is too
expensive to build and takes too much space
steam. My turbo generator of 5 K.W. would
be hardly one third the size and would save as
100 lbs. steam per hour. I have been
working hard ~~to~~ persuading them to
adopt mine and think they will.

As you see all this means big

actions business if I am successful not to speak
of other projects in connection. I am
been arranging for the demonstration before the
matters officials about middle of next week and
orders as I am confident of a veritable triumph
as are I am anxious not to touch on financial
in the matter until then.

Withholding from the funds in the Debt are.
We have of course a perfectly
much safe claim for about \$7000⁰⁰ in the
could be released and also for an additional sum
same as compensation in the patent suits but
it will take time to collect this and
therefore we must depend on the debts here
for the present. What I would want you
to do is to address whatever their
Skerritt will require Saturday next

and - perhaps, if it is not too much
of a sacrifice to deposit say \$1000
for the account of the T.C.I. This will
be enough to make it unnecessary
for me to raise the question of money
until I am through, when they will
naturally have to approach me in
the matter
Hoping to see you very soon with
love

Very yours

Mr. George Schott Esq.
17 Battery Place
Union Sulphur Co N.Y.

St Paul

My
I
I
pe
the
feel
at
more
hours
5
are

the week I say him to call on you
again but in pretty soon to be in
New York but later than Sunday after-
noon with the report of a long battle
fought out soon.

Very truly
yours

See 1 day 27.

& has 40 ft.

N. Y.

N. Y. 101

P. S. I am now 73 and only return
I think at last to my former station
in the railroad corner. I find
however that you should be more fully
informed before proceeding. The claims
are perfectly safe.



Dec. 25, 1917

My dear Mr. Schmitt,

I have a few lines to supplement my
dispatch of yesterday.

Under the name you are known to me
of letter to P. S. C. which our members of the committee
I have made. Paragraph 11 deals with the question
of reform to be made to be a colonial success. Not
only does it regulate in the manner of a perfect
country, but it also implies that the
are in proportion to the size and not desirable for
instance, it adjusts itself with the number of
committees of persons known to be applied
suppose that the necessary or the necessary

under way now say, so to 250 lbs. is better for
activity, the more we have the greater effect
on the speed or performance of the turbine. It
also indicates the rotating system always in
the condition of low friction resistance. This
is why there is just a very slight sag, it is
understandable. It also says the device on all my
turbines which are presently supplying the appa-
ratus and various devices.

Now as to how will the P.V. Co. return
should be under-

payment of \$2000 = an extension of two op-
tions (foreign and domestic lighting) for one
month to date from completion of office
costs of my machine at their factory. There
will be paid within a week. At the expiration
of the term they will have to carry out their
option with cash, goods and guarantees as
provided in agreement. There is no doubt that

they will do it but my fight for another
short extension. They are not anxious to
start reconstruction and several meetings with
recluses have been arranged in soon as
the office but not made. There are from
3000 to 3500 machine, most of them in the state
containing labor.

You will recall that in addition to
what you & I saw recently forwarded to the
T.C. Inc. another for \$1000 = in the amount
some time ago. Let me say for
each advance made by me in the course
of the work. I have had a long struggle
with them about my personal cooperation
and expenses incurred by myself as well
as on behalf of the Company and while
no definite conclusion has been reached I
believe they will try to do this.
At all speculative are away for



Dec. 25, 1917

My dear Mr. Schuff,

Just a few lines to supplement my
dispatch of yesterday.

When you will find (in file) copy
of letter to P. & C. which enumerates the improvements
I have made. Paragraph 11 deals with the invention
referred to, proved to be a colossal success. Not
only does it regulate in the manner of a perfect
centrifugal device of ideal simplicity but that is
more for properties unique and most desirable. For
instance, it adjusts itself instantaneously to
variations of pressure however great. To be explicit
suppose that the steam pressure on the locomotive

could vary from say, 50 to 250 lbs. no matter how rapidly, this would not have the slightest effect on the speed or performance of the turbine. It also maintains the rotating system always in the condition of least frictional resistance thus saving steam. In fact, as everybody says, it is wonderful. I shall adopt this device on all my turbines which will greatly simplify the operation and insure success.

Now as to business with the P.W.C. matters stand as follows:

6th
payment of \$2000⁰⁰ an extension of two options (foreign and domestic lighting) for one month to date from completion of official tests of my machine at their factory. These will be made within a week. At the expiration of the term they will have to carry out three options with cash payments and guarantees as provided in agreement. There is no doubt that

they short start resist the off 30000 content check T.C. some cash a of the with the and ex as a no defi believe As

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go, it is
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C. letters

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There

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as there

as believe

at this

they will do it but may fight for another
short extension. They are most anxious to
start manufacture and several meetings with
railroad men will be arranged as soon as
the official tests are made. There are from
3000 to 3500 machines involved in the deals
contemplated.

You will recall that in addition to
check for \$2000 = recently forwarded to the
T. C. Inc. another for \$1000 = was transmitted
some time ago. The latter sum was for
cash advances made by me in the course
of the work. I have had a long wrangle
with them about my personal compensation
and expenses incurred by myself as well
as on behalf of the Company and while
no definite conclusion has been reached I
believe they will try to be fair.

All executives are away for

the week I may have to call on you
again but am pretty sure to be in
New York not later than Sunday after-
noon with the report of a long battle
fought and won.

Sincerely yours

Geo. Scheff Esq.

8 West 40 St.

N. Y.

N. T. Torb

P. S. In view of my early return—
I think it best to postpone action
in the wireless cases until then. I find
however that you should be more fully
informed before proceeding. The claims
are perfectly safe.

My dear

dispute

of letter

I have

referred

only do

centrifuge

are for

instance

association

suppose

difficult to say how soon I
shall be free. It looks as though
another week should see me through.

Geo. Scherff Esq.

Tesla Co Inc.

8 West 40 St. N.Y.

Yours sincerely

N. Tesla

P. S.

Please instruct his Herriets that
the cost of 2000 ^{or} forwarded should
be charged to our exp. account



Feb. 10. 1918.

My dear Mr. Scherff,

Just a few words in a hurry
to explain to you why I am
sticking here at the sacrifice of
all other interests.

The fact is I have developed
a big proposition. To state
briefly my machine will save
in coal and service alone about

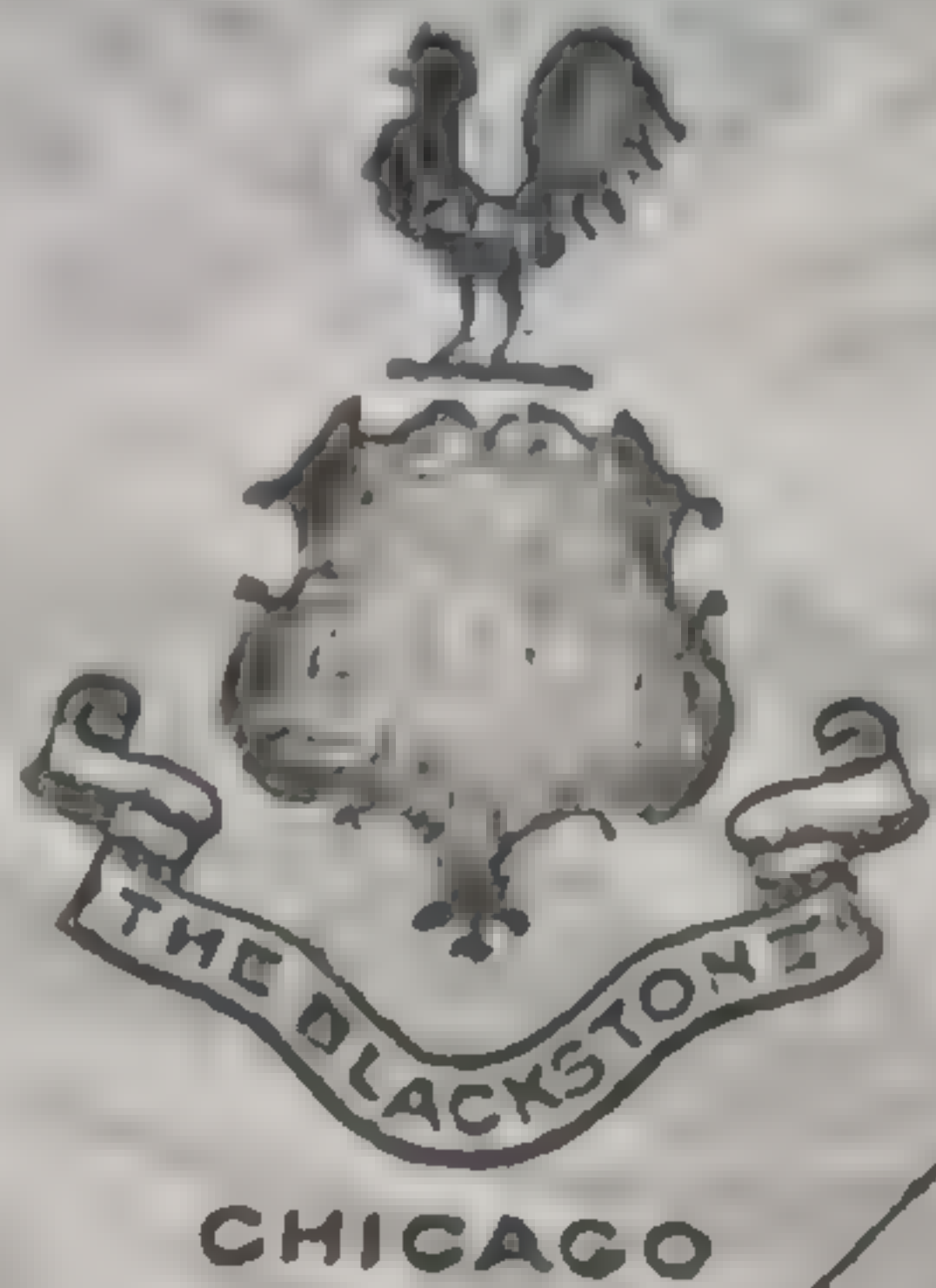
one hundred dollars and, taking into consideration transport, closely on five hundred dollars per annum. This makes for 5000 machines already installed twenty five million dollars per year. As you see it is an important consideration for R.R. at this moment when economy is the keynote. I think that our business friends are now convinced of the soundness of my views and will act accordingly.

The lightning possibilities in other fields are now being investigated. At their request I have dictated

the enclosed to facilitate the work of their commercial department. I have no doubt whatever that they will take advantage of this rare opportunity. If so they will probably manufacture five thousand machines a month.

I am naturally very anxious about the Government work I have undertaken as I know that I am under great services just now. But people in Washington may not understand that I must first get the money to carry out my projects.

The work on details of manufacture keeps me still busy and it is



Feb. 10. 1918.

My dear Mr. Scherff,

Just a few words in a hurry
to explain to you why I am
sticking here at the sacrifice of
all other interests.

The fact is I have developed
a big proposition. To state
briefly my machine will save
in coal and service alone about

one hundred dollars and, taking
into consideration transport, closely
on five hundred dollars per annum.
This makes for 5000 machines already
installed twenty five million dollars
per year. As you see it is an
important consideration for R.R. at
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as I know that I am under great
services just now. But people in Washington
may not understand that I must first
get the money to carry out my
projects.

The work on details of manufacture
keeps me still busy and it is

difficult to say how soon I
shall be free. It looks as though
another week should see me through.

Geo. Scherff Esq.
Tasle Co Inc.

Yours sincerely

F. West 40 Str. N.Y.

N. Tesle

P. S.

Please instruct him Herriot that
the cost of 2000 cc forwarded should
be charged to our expense account

My

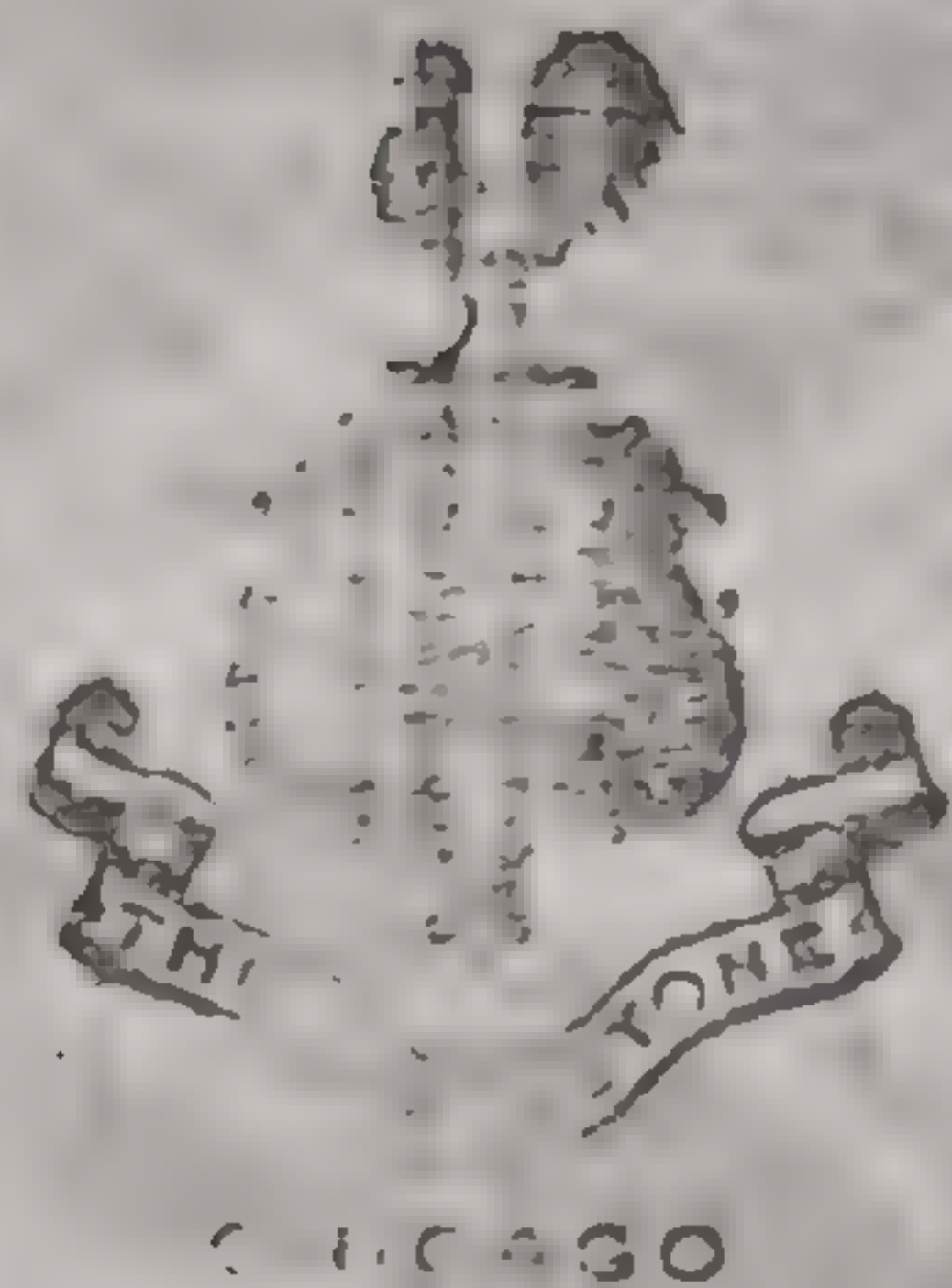
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CHICAGO

March 14th 1911

Dear Mr. Scherff,

Inclosure please find two reports
signed as requested.

Have no time to write only to
tell you that we are hard at work
to deliver first machine within ten
days.

See you soon.

With regards

Es. Scherff Esq.

8 West 40 Str.

New York

Sincerely

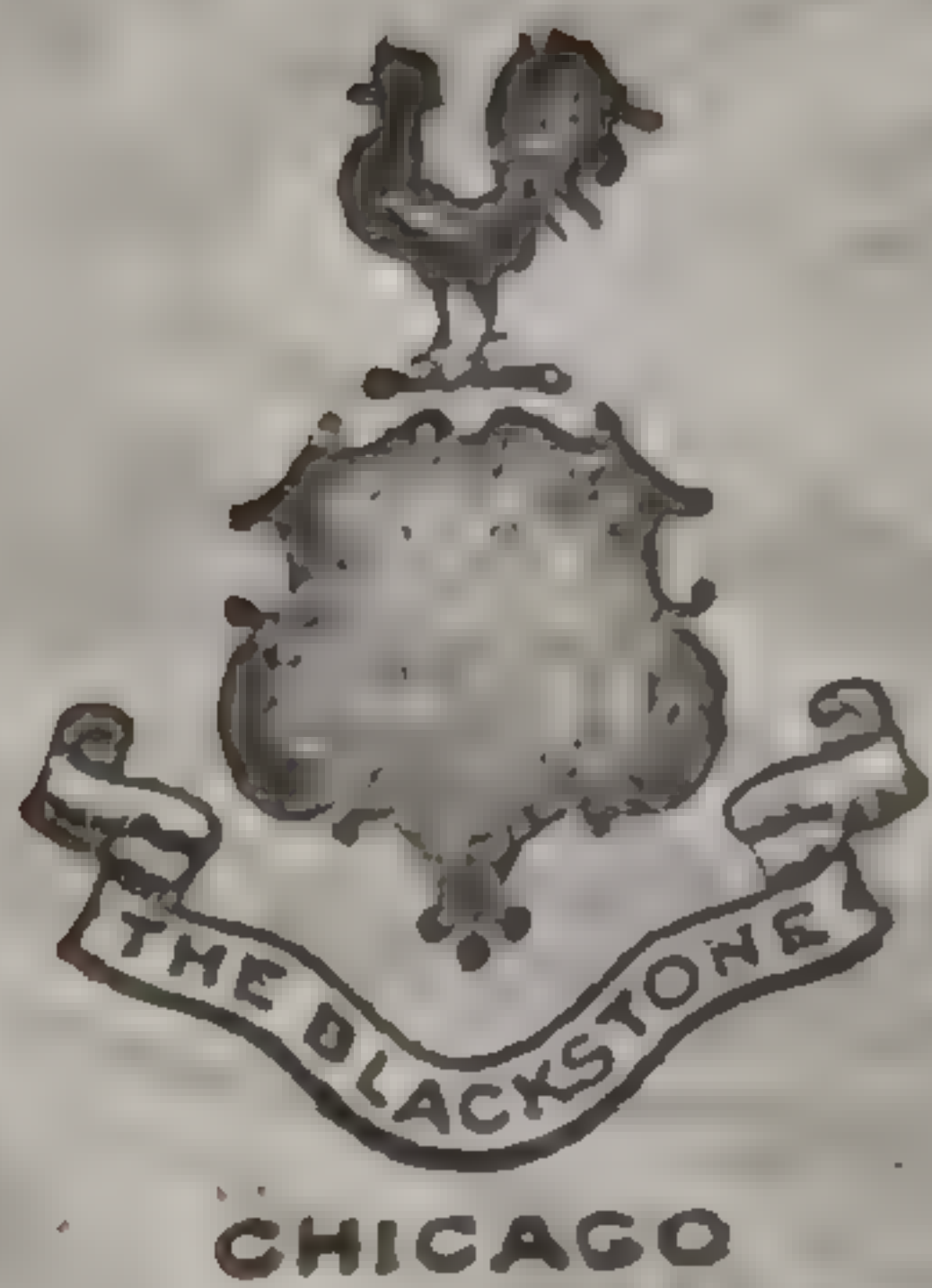
A. Tash



March 11. 1918

Dear Mr. Scherff,

Your letter of 9th inst. with
enclosure just received. The letter
has interested me greatly, of course;
also gives me some regret that I
have not accomplished more. However,
the present prospects are very bright
and I am confident that your
next statement will be quite different.



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NIKOLA TESLA
COMPANY

8 West 40th St.
TEL. 9093 BRYANT
NEW YORK

March 6, 1913

Dear Mr. Scherff,

According to information you furnished some time ago we may assume that the full time (24 h.) operation of eight wells necessitates at present a daily consumption of 4000 barrels of oil which is usually rated at 18000 heat units per pound. Each barrel containing about 42 gallons, the total quantity of oil burned each 24 hours will be, roughly, $4000 \times 42 \times 8$ pounds. Hence the whole heat energy developed in the combustion is -

$$H = 4000 \times 42 \times 8 \times 18000 = 24192000000 \text{ heat units}$$

Now the water supplied from the heaters or "boilers" is from 4500 to 5000 gallons per minute. Taking the bigger figure (which will show higher efficiency) the entire quantity of water supplied to the eight wells in 24 hours is about $5000 \times 8 \times 60 \times 24 = 576000000$ pounds. Mr. Keenan testified that the temperature of delivery is almost invariably 285.

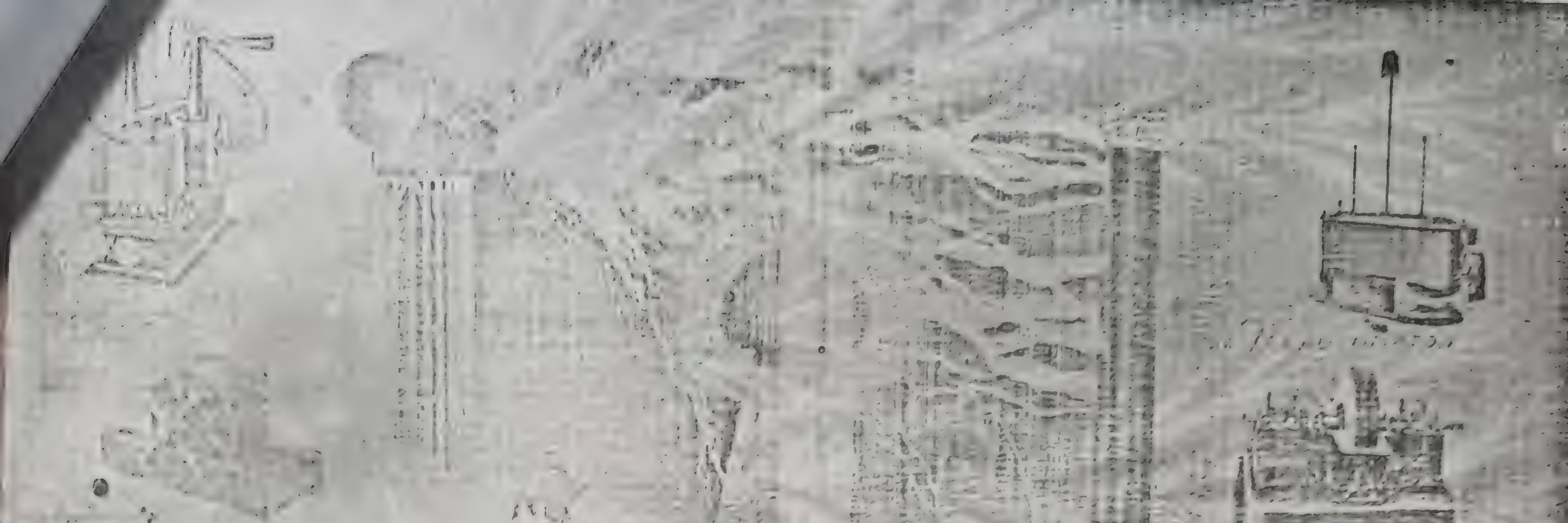
and as the water enters the "boilers" at about 70°
the increase in its temperature $215 - 70 = 145^{\circ}$; Consequently,
the heat of the fuel imparts to the water a quantity equal to

$$h = 57600000 \times 145 = 12384000000 \text{ heat units.}$$

The ratio $\frac{100 \times h}{H} = \frac{100 \times 12384000000}{24192000000} = 51.2 \text{ percent.}$ As the
bigger figure of 5000 gallons per minute was assumed it is
safe to conclude that the heat actually supplied to the eight
wells is less than fifty percent of that developed by the fuel.
Note first that in my proc. twice as much will be
furnished from the same quantity of oil.

But there are other considerations of equal if not greater
importance and I shall dwell on two of them.

The water is ejected from the wells at a temperature
of $170^{\circ} - 190^{\circ}$, say, 180° on the average and a very large
portion of the heat is thus thrown away. In my process
I can use this hot water over and over so that instead
of heating it from 70° to 285° as at present I shall have
to warm it up from 180° to 285° . In other words, while
each pound of water requires now a heat supply of
 $285 - 70 = 215$ heat units as above pointed out, I
shall need only $285 - 180 = 105$ heat units or less
than one half to produce the same effect with
each pound of water. Theoretically, then, I shall



NIKOLA TESLA
COMPANY

8 West 40th St.
TEL. 9090 BRYANT
NEW YORK

require only one quarter of the quantity of oil burned
at present.

But another fact may be, perhaps, of still greater
significance.

Your figures show that eight wells calling for a
fuel consumption of 4000 barrels daily in continuous
operation will yield about 3000 tons of sulphur each
24 hours. Sulphur melts at 239° and the latent heat
of fusion is about 19 heat units. The specific heat
being 0.2 each pound of sulphur requires for lique-
faction $239 \times 0.2 + 19 =$ (nearly) 67 heat units, therefore
all the heat consumed in the fusion during 24 hours is

$$h' = 3000 \times 2200 \times 67 = 442200000 \text{ heat units.}$$

The ratio $\frac{100 \times h'}{h} = \frac{100 \times 442200000}{12384000000} = 3.57 \text{ per cent}$

which means to say that if the heat actually applied

$100 - 3.57 = 96.43$ percent is wasted, or
 $100 - \frac{3.57}{2} = 100 - 1.785 = 98.215$ percent of the
heat developed by combustion of the oil. In view
of this enormous waste at the locus of operation
an improvement in the efficiency of ^{transmission} heat to the
sulphur is of extreme importance. I believe
that, working as I propose, instead of wasting
96.43 percent of the applied heat as at present
this loss will be reduced to possibly 92.86 percent
and that would mean that I may produce with one
eighth of the fuel the same results which are
now obtained. That is to say, the diurnal saving
might be about 3500 barrels. Of course, I
would not vouch for such results but the theory
is sound and they would not surprise me.
You might mention these facts to Mr. Weston
(not forgetting my caution) when you take up the
subject with him.

Yours very truly

N. Tesla

Geo. Scherff, Esq.

Union Sulphur Co

33 Rector St. N.Y.

NIKOLA TESLA
COMPANY

8 West 40th St.
TEL. 9093 BRYANT

NEW YORK March 6, 1923

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But there are other considerations of equal if not greater
importance and I shall dwell on two of them.

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NIKOLA TESLA
COMPANY

8 West 40th St.
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NEW YORK

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Geo. Scherff, Eng.
Union Sulphur Co.
33 Rector St. N.Y.

N. Tesla

We want a modification
 color in the arrange-
 ment of the valves
 and ganges. It will
 be necessary to have a
 pressure indicator close
 to the boiler.

The Waldorf-Astoria
 New York.

Aug. 16. 1901

Dear Mr. Schaff,

Your letter received.
 Have settled nearly
 all details about
 a model for a sent
 to be manufactured
 in France. The
 drawing will be
 ready for review &
 work will begin.

